

SIEMENS

ARCADIS

SP

Installation and Startup

System

Navigation

Valid for
ARCADIS Varic
ARCADIS Orbic
ARCADIS Orbic 3D

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Safety information

NOTICE

- ⇒ When performing the work steps and tests described herein, observe the product-specific safety information contained in the documents as well as the general safety information TD00-000.860.01....

Notes and symbols

Emphasized text in this technical documentation has the following meanings:

DANGER	DANGER indicates when there is an immediate danger that leads to death or serious physical injury.
WARNING	WARNING indicates a risk of danger that may lead to death or serious physical injury.
CAUTION	CAUTION used with the safety alert symbol indicates a risk of danger that leads to slight or moderate physical injury and/ or damage to property.
NOTICE	NOTICE used without the safety alert symbol indicates a risk of danger that if disregarded leads or may lead to a potential situation which may result in an undesirable result or state other than death, physical injury or property damage.

Fig. 1: Safety Notes

NOTE	<ul style="list-style-type: none">• Steps to be performed are preceded by a bullet point.- Indented text under the activity to be performed contains general information.⇒ Results and events are indented and preceded by an arrow.
NOTE	Depending on the progress of the configuration, the "Next" button might also be displayed as the "Finish" button.

NOTE

Once the "Save" button has been selected in the individual screens, the message "..... successfully saved" appears following a successful save. Please:



- Select "OK".

NOTE

If any problems arise when making changes in the Service UI, attempt to resolve them first by powering the system completely off and then powering it on again.

ARCADIS Varic/Orbic/Orbic 3D navigation

This document describes installation and configuration for 2D and 3D navigation.

The 3D navigation kit is a universal HW and SW interface which controls navigation systems provided by different navigation system vendors.

The navigation system itself is not provided by Siemens, but always by a navigation system vendor.

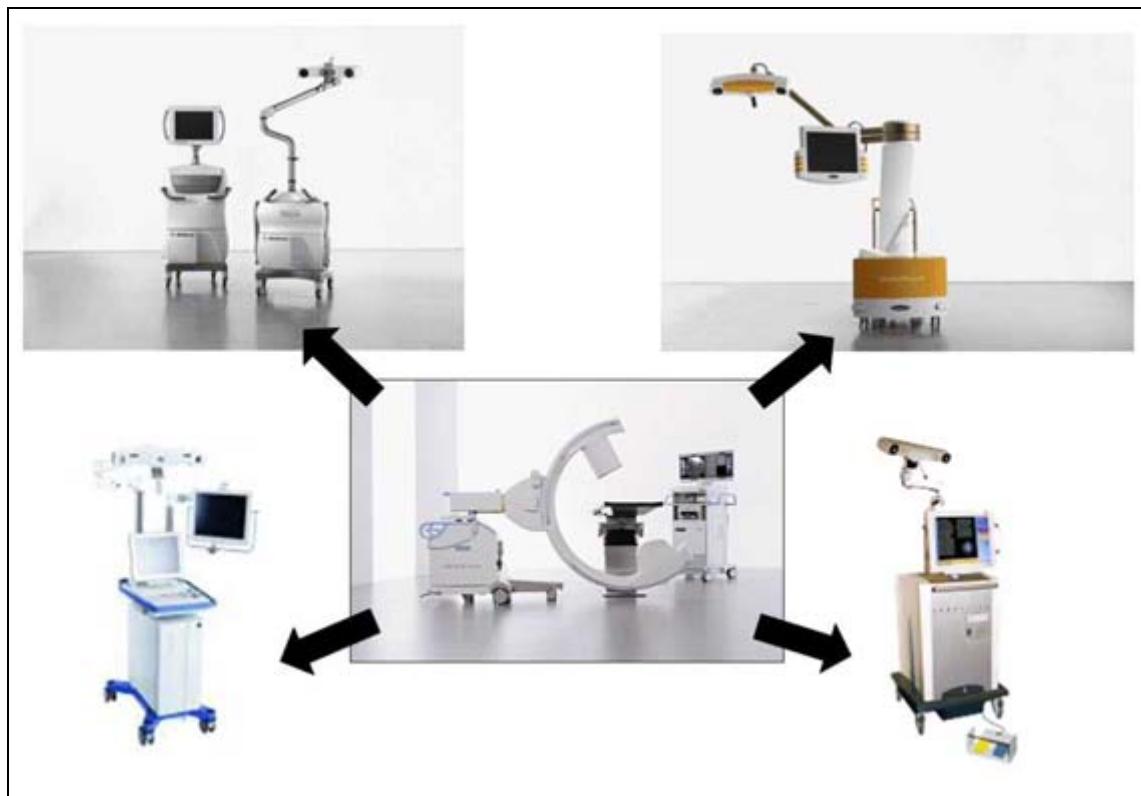


Fig. 2: Cooperation

Procedure in collaboration with the navigation system vendor BrainLAB

No time overlap when installing the navigation system

In coordination with the navigation system vendor BrainLAB, the installation of the Navilink interface and the start-up of the navigation system are performed sequentially, with no time overlap of technician service calls.

The navigation system vendor informs the customer that the ARCADIS Iso-C must be prepared for navigation. The customer informs the SIEMENS technician of this and schedules the service call to have the Navilink interface installed.

After the SIEMENS technician has performed the necessary tasks, he or she notifies the navigation system vendor. The navigation system vendor schedules its own service call.

The presence of a SIEMENS technician is no longer necessary.

This will prevent waiting periods for the SIEMENS technician as well as for the navigation system vendor's technician.

For this reason, the procedure described below should be followed.

Tasks performed by Siemens

After the customer has placed the order, the following tasks are performed by SIEMENS:

- Schedule the service call with the customer.
- Check for all required system updates and perform any that are still necessary.
- Install the new grid holder on the image intensifier.
- Check for the latest SW version and install it if necessary.
- Check for the Navilink license and install it if necessary.
- Configure a default network node.
- Calibrate 3D reconstruction, but without the marker ring installed.
- Fill out and send the fax form to BrainLAB. Fill out the form with all data required by BrainLAB.

NOTE

When BrainLAB receives the fax form, they contact the customer, schedule the service call for installation and start-up of the navigation system, and perform all required steps. A SIEMENS technician is no longer required to be on-site for this phase.

Tasks performed by BrainLAB

The following tasks are performed by a BrainLAB technician trained for the ARCADIS, without the presence of a SIEMENS technician:

- Install and start up the navigation system.
- Check the network communication between the imaging system and navigation system.
- Adjust the DICOM network node if necessary.
- Calibrate 3D reconstruction with the marker ring installed.
- Check the 3D high resolution.
- Create a backup CD.
- Turnover to customer, customer briefing.

Procedure in collaboration with all other navigation system vendors

There is a time overlap between the Siemens technician and the navigation system vendor's technician

In such cases, the Navilink interface installation can only be partially performed by a SIEMENS technician. Some tasks must be carried out in close cooperation with a technician from the navigation system vendor.

This means that the SIEMENS technician must make two service calls to integrate the navigation system.

Tasks performed by Siemens

- Schedule the service call with the customer.

Tasks performed by the Siemens technician (first installation service call)

The following tasks must be performed by the SIEMENS technician during the first installation service call:

- Check for all required system updates and perform any that are still necessary.
- Install the new grid holder on the image intensifier.
- Check for the latest SW version and install it if necessary.
- Check for the Navilink license and install it if necessary.
- Configure a default DICOM network node for the navigation system.
- Calibrate 3D reconstruction. Only the calibration without the navigation system can be performed since the navigation system's marker ring is not present.
- Check the image quality and 3D high resolution.

Tasks performed jointly by Siemens and the navigation system vendor (second installation service call)

The following tasks are performed together with a technician from the navigation system vendor:

- If necessary, adapt the DICOM network node configuration to the navigation system.
- Check the network communication between the imaging system and navigation system.
- Calibrate 3D reconstruction (with marker ring). In the case of a removable marker ring, the first calibration part (without installed marker ring) is valid.

The test piece provided with the Navilink kit for testing the navigation system is to be stored in the monitor cart or given to the customer for storage after installation is complete.

The navigation system vendor turns the navigation system over to the customer and performs the necessary customer briefing.

The overlapping work time of the two technicians is approx. 5 hours.

Overview - flow chart

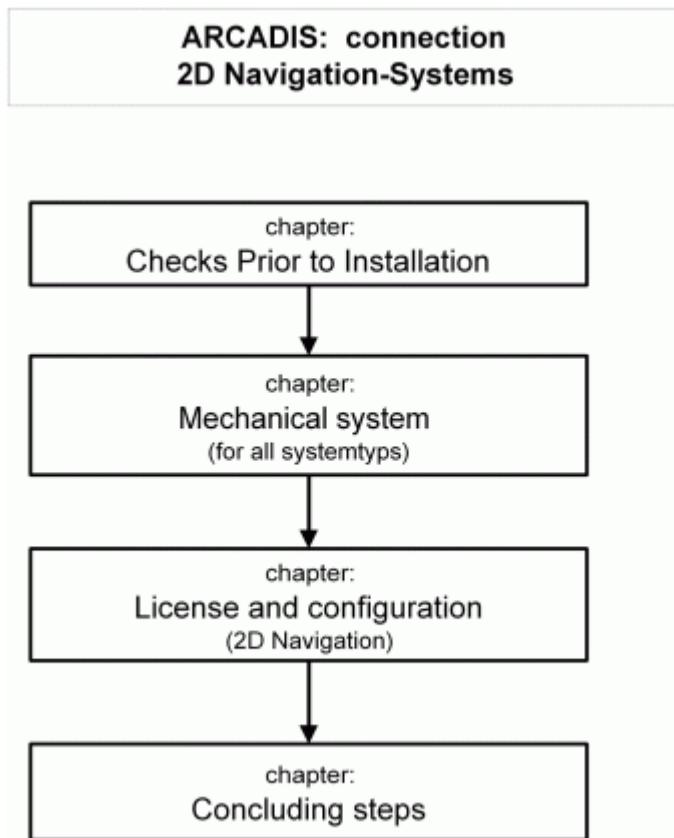


Fig. 3: 2D connection

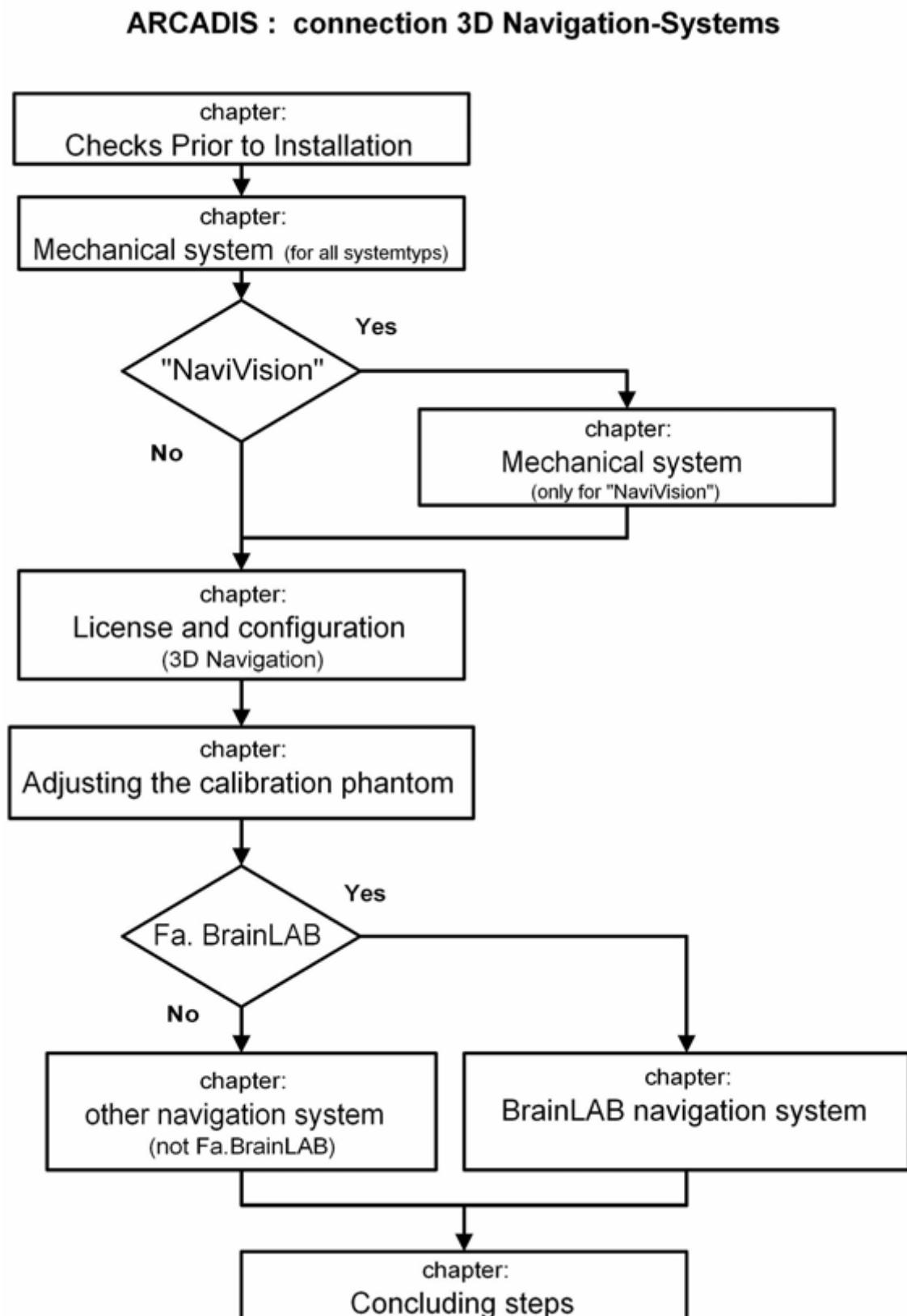


Fig. 4: 3D connection

3D calibration

Calibration is necessary

In the case of:

1. Image intensifier replacement
2. Grid ring replacement
3. Replacement of the I.I. mini-voltage supply
4. Camera optics replacement
5. Insufficient image quality

Information for the navigation company

If it is necessary to calibrate 3D during a service call, the following points are to be performed by the Siemens service technician.

1. Inform the navigation company of the necessary navigation calibration.
2. Inform the customer of the fact that the navigation system must be calibrated and that the system may not be used in connection with navigation until this calibration has been performed.

Required tools and materials

Calibration phantom: material no. 75 51 620 G5486

NOTE

The older calibration phantom, material no. 71 39 947 G5486, cannot be used in combination with a navigation system!

Tool kit

Allen wrench set

Insulating tape

Several blank CD-ROMs

References

System configuration	SPR2-320.843.02
Image quality quick test	SPR2-320.820.02

Updates

- Check to see whether all necessary system updates have been performed.
 - The updates are available in the intranet, for example.
- Perform any necessary updates.

Function check

- Check to ensure that the system is functioning properly.
- Perform visual check of the 3D navigation kit for completeness.
- Perform visual check of calibration phantom for correctness.
 - For example whether all lead balls are present in the phantom.

Replacing the grid holder on the image intensifier

Fig. 5: I.I._1

- Remove the screws of the grid holder.



Fig. 6: I.I._2

- Remove the microswitch.
- Cut the cable and insulate it with insulating tape.

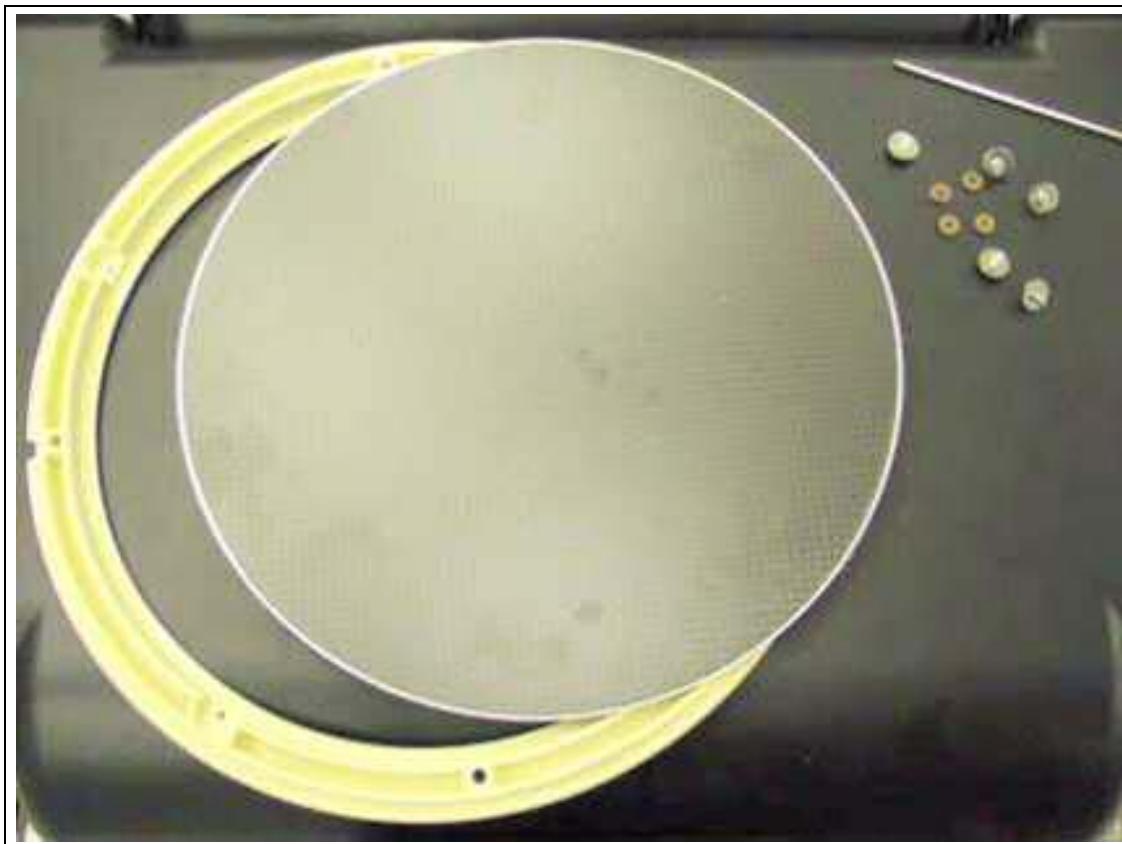


Fig. 7: I.I._3

- Carefully remove the grid from the grid holder..
 - The gaskets are no longer needed.
- Place silicone (20 48 981) around the fit of the new metal grid holder (75 51 703).
- Press on the grid with correct alignment (= -45 degrees) with respect to the grid holder.
 - See the following image.



Fig. 8: I.I. _ new

NOTE

The new grid holder has a protruding pin. The grid must be inserted and glued with the label at a 45 degree angle to the pin. The new grid holder must be installed with its pin toward the end of the C-arm.

- Wait for the silicone to harden (approx. 30 min.).
- Attach the grid holder to the I.I. and secure it with screws (11 22 571) and contact washers (34 16 66)6.

Attaching the label to the unit

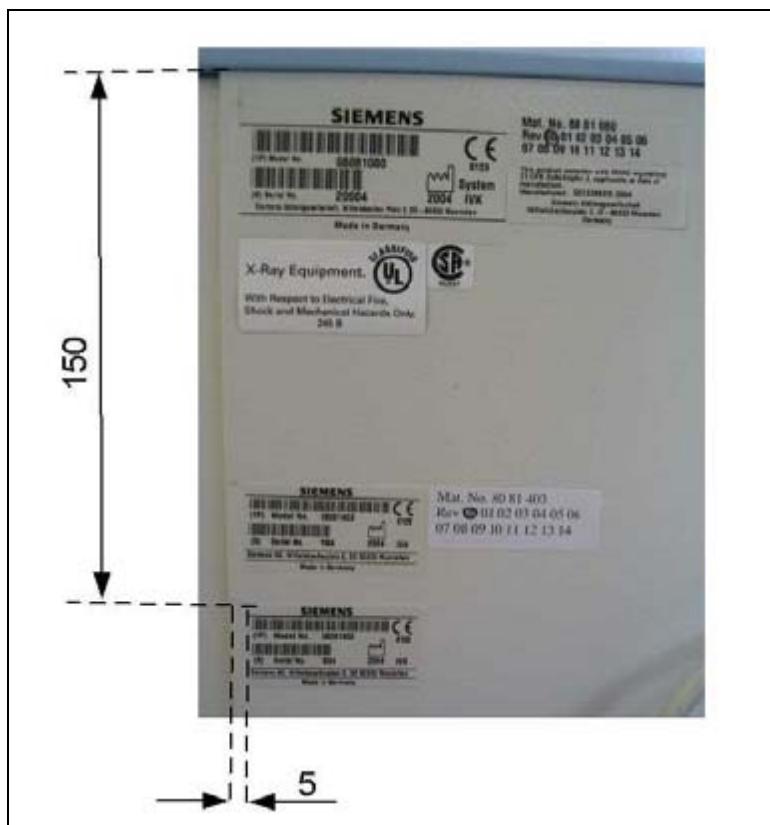


Fig. 9: Label

- Attach the supplied label (75 51 828) for the 3D Navilink to the unit according to the figure.

General information

- Make sure that the system is switched completely off.
- Remove the back wall from the monitor cart.
- Remove the side covers from the monitor cart.
- Remove the bottom cover from the monitor cart (switch-on module).
- Disconnect both plugs from the UPS.
- Loosen the tightening belt for the PC and turn the ratchet so that it points in the direction of the side cover.



Fig. 10: Belt

- Tighten the tightening belt for the PC again.

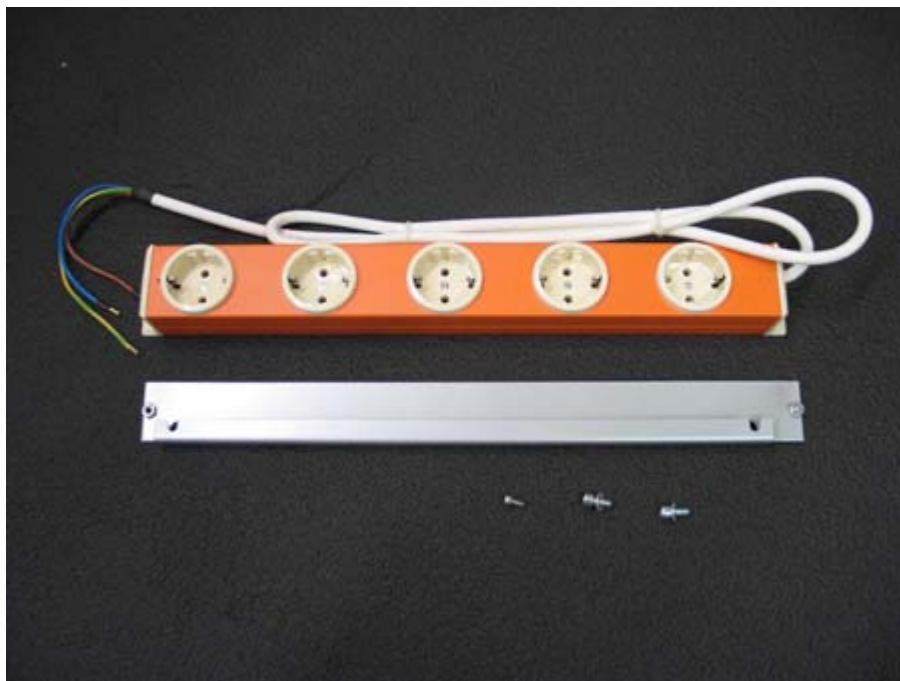
Power socket

Fig. 11: Power socket material

- Feed in the multiple socket outlet cable.

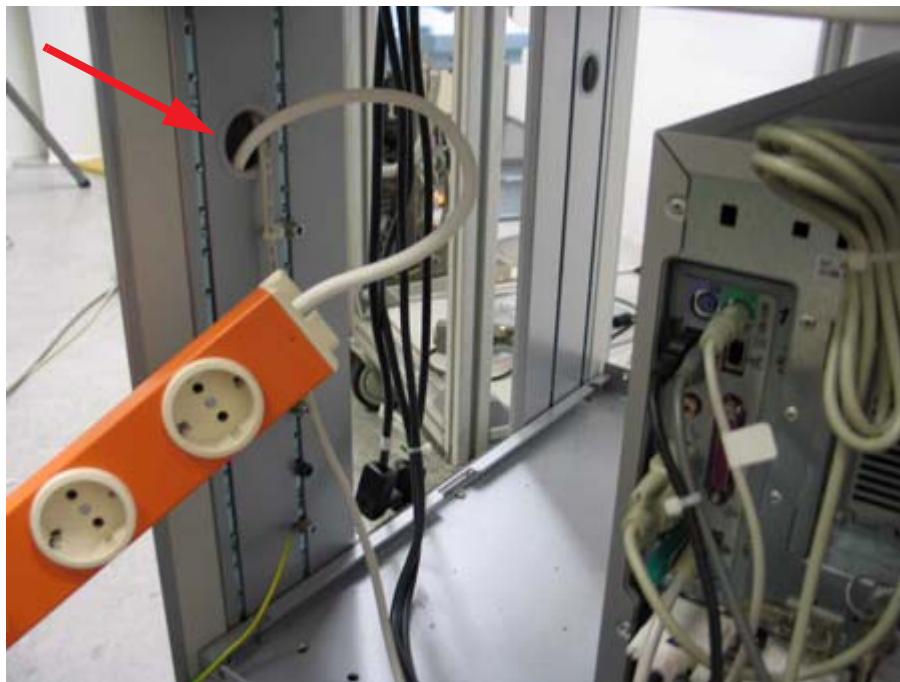


Fig. 12: Power socket 1

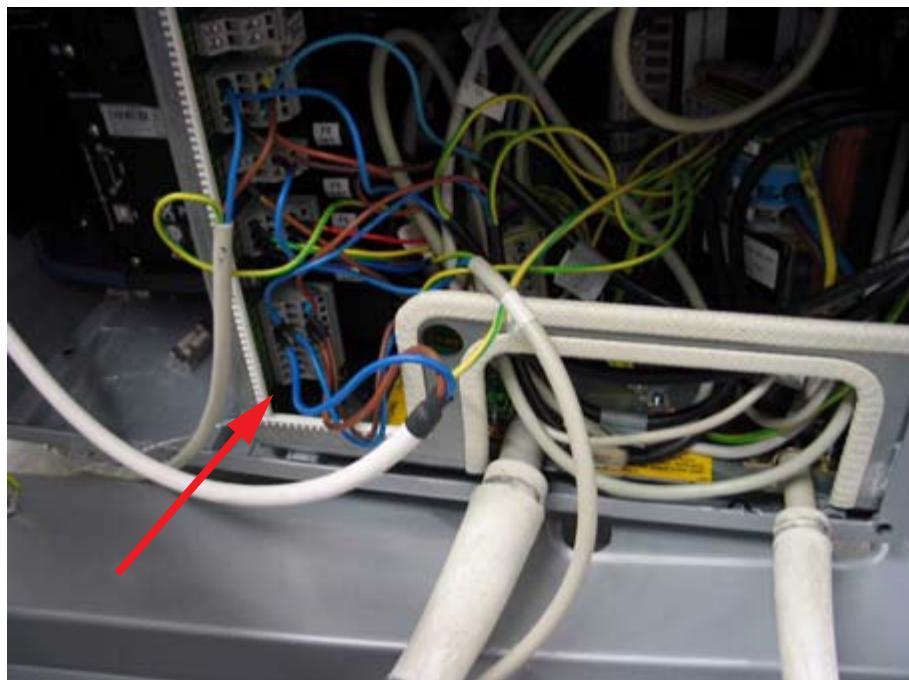


Fig. 13: Power socket 2

- Attach the blue wire to X2.1.
- Attach the brown wire to X2.2.

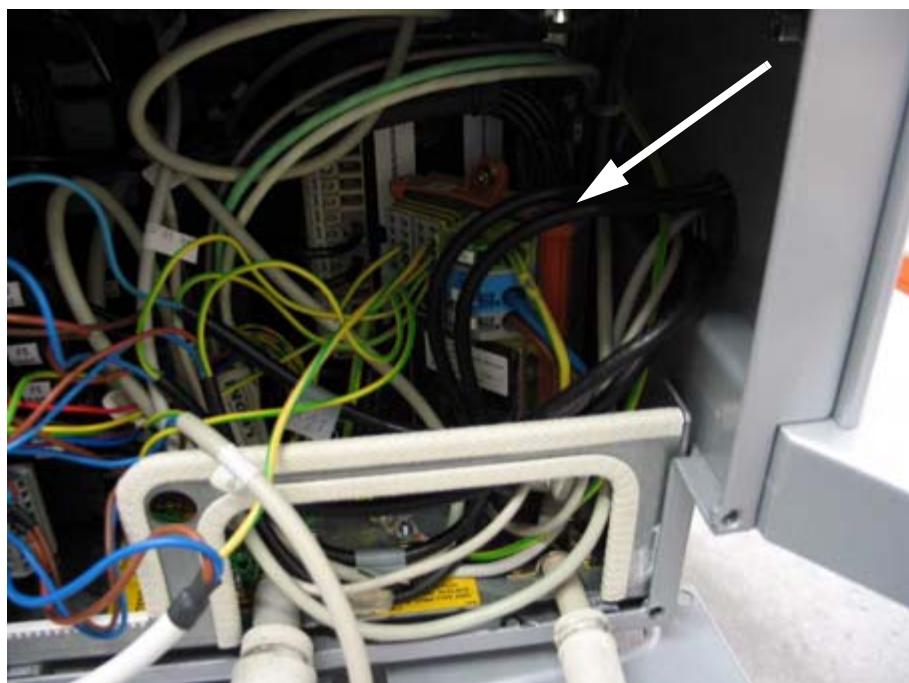


Fig. 14: Power socket 3

- Attach the ground wire to X5.

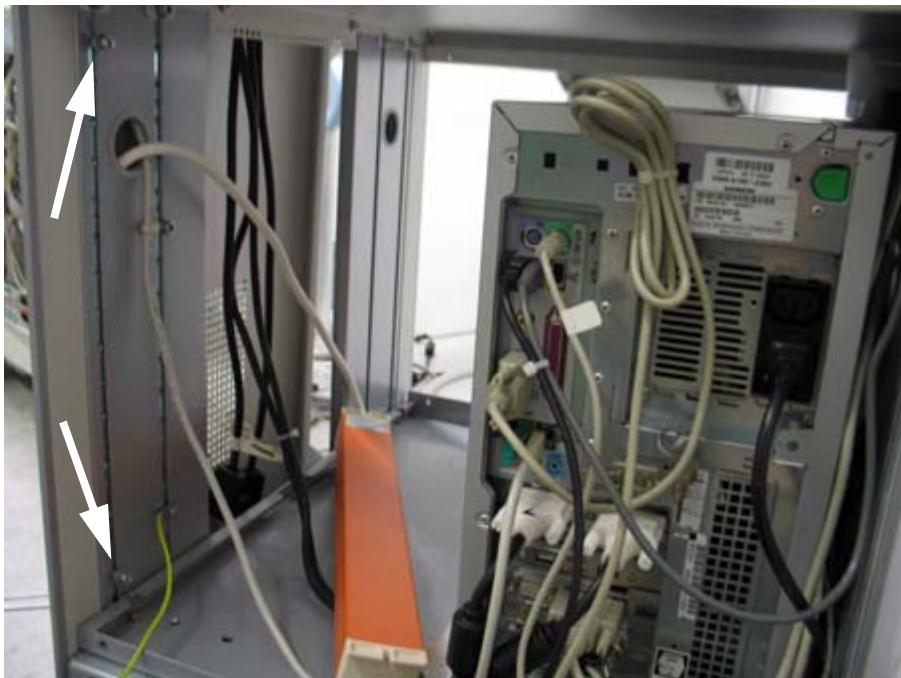


Fig. 15: Power socket 4

- Install the 2 screws (M6) with serrated lock washers but only screw them in 2-3 turns.



Fig. 16: Power socket 5

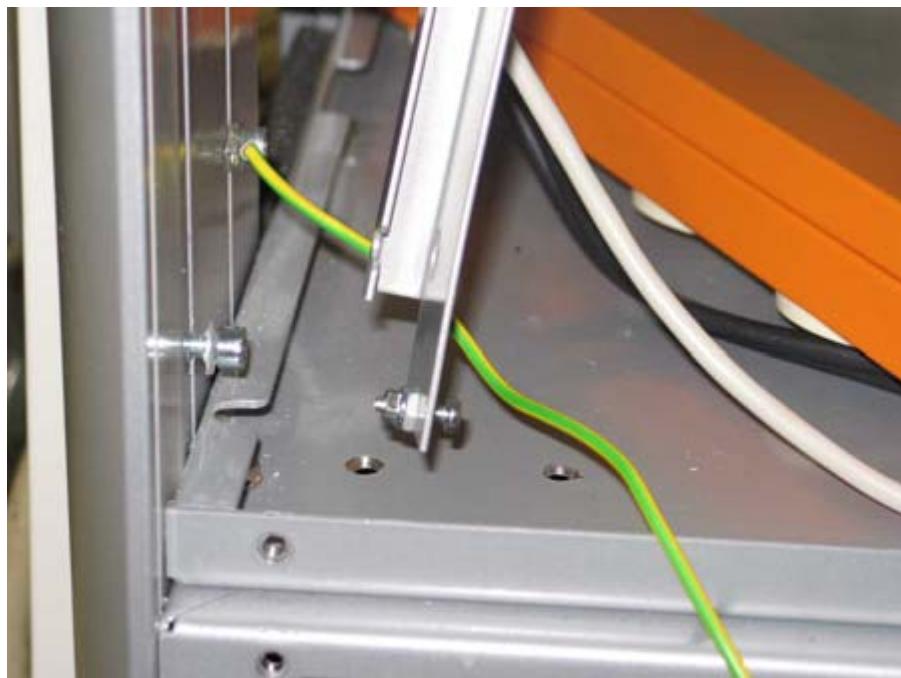


Fig. 17: Power socket 6

- Slide in the metal holder and tighten the screws (M6). Be sure that the bolt is on the bottom.



Fig. 18: Power socket 7

- Attach the multiple socket outlet to the metal holder and secure it with screw (M4).
 - The bottom of the multiple socket outlet is only supported.

Network hub

Fig. 19: Network hub material



Fig. 20: Network hub 1

- Remove the 2 fastening screws (M6) from the shelf.



Fig. 21: Network hub 3



Fig. 22: Network hub 4

- Attach the U bar above the PC and be sure that the cutout is against the side wall of the monitor cart.



Fig. 23: network hub 8

- Remove the screw from the PC holder.



Fig. 24: Network hub 5



Fig. 25: Network hub 6



Fig. 26: hub_gap_short

- Secure the network hub in the metal holder so that the connections of the network hub point in the direction of the smaller cutout (see picture).



Fig. 27: Network hub 7

- Mount the network hub via the metal holder to the U bracket in the monitor cart.

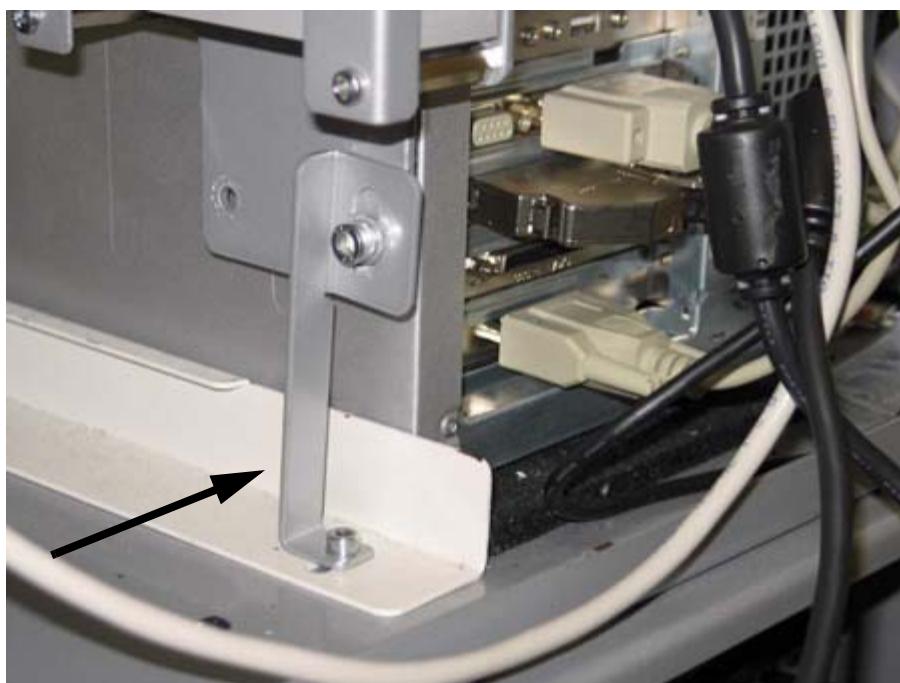


Fig. 28: Network hub 9

- Mount the support bracket by pressing the entire network hub holder upward and tightening the screw (M6).

Network socket



Fig. 29: Network socket 1

- Remove the interface collimator.

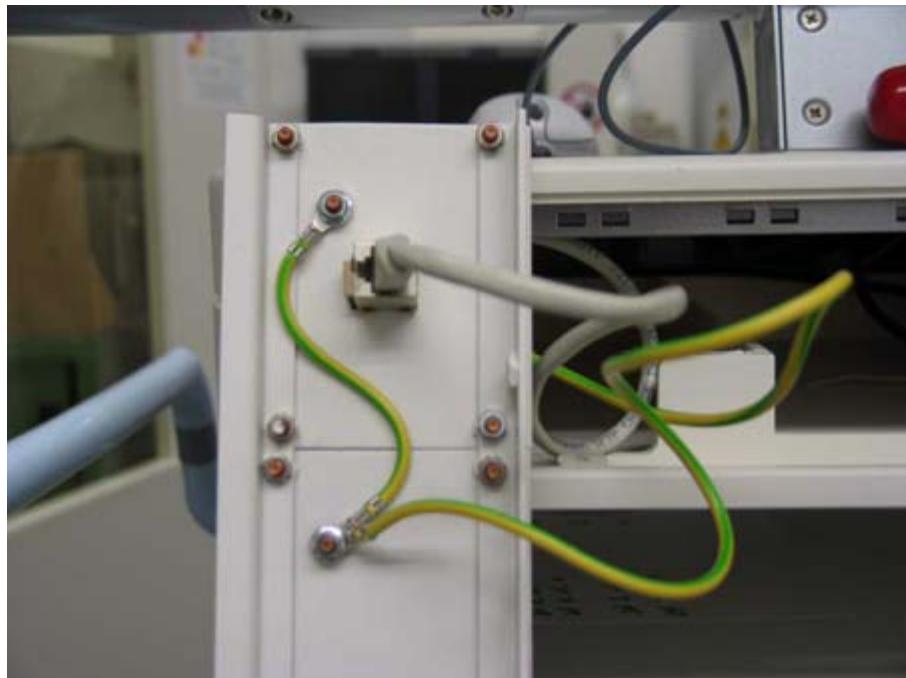


Fig. 30: Network socket 2

- Disconnect the network plug.
- Remove the single network outlet holder.



Fig. 31: Network socket 3

- Mount the double network outlet holder but only tighten the two bottom nuts.

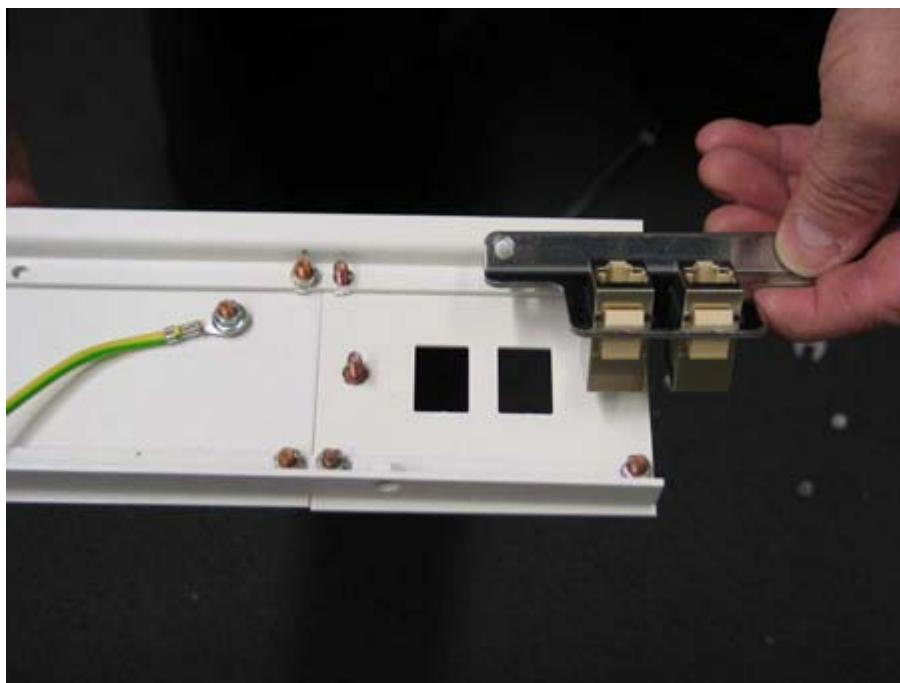


Fig. 32: Network socket 4

- Insert the double network outlet with the inputs pointing in a downward direction.
- Secure the double network outlet.

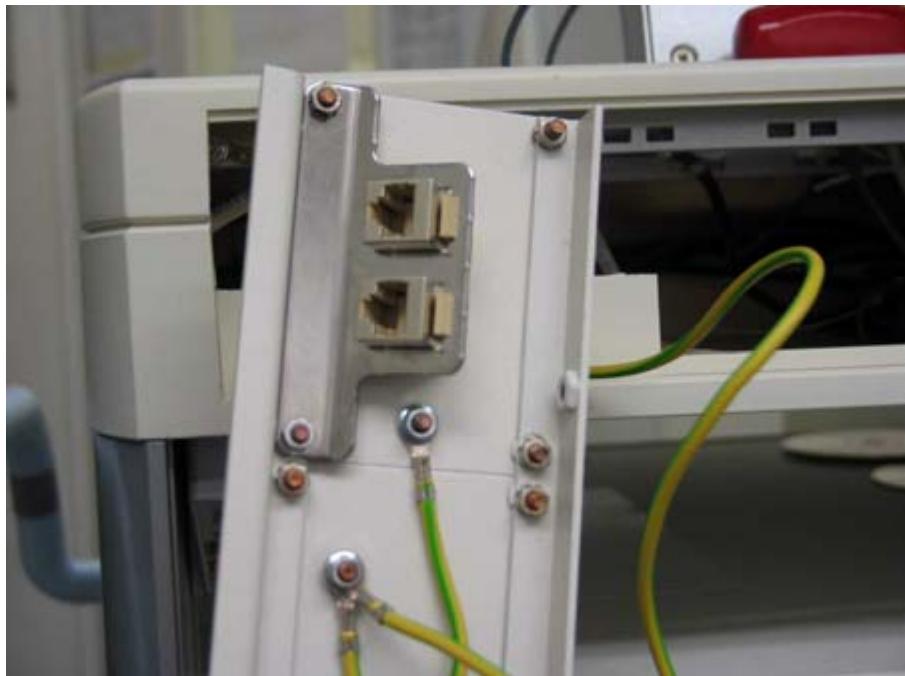


Fig. 33: Network socket 5

- Reattach the grounding.
- Pull a network cable from the interface compartment to the network hub on the left side (seen from the back) of the monitor cart.
- Insert the 2 network cables into the double outlet.
- Reinstall the interface collimator.

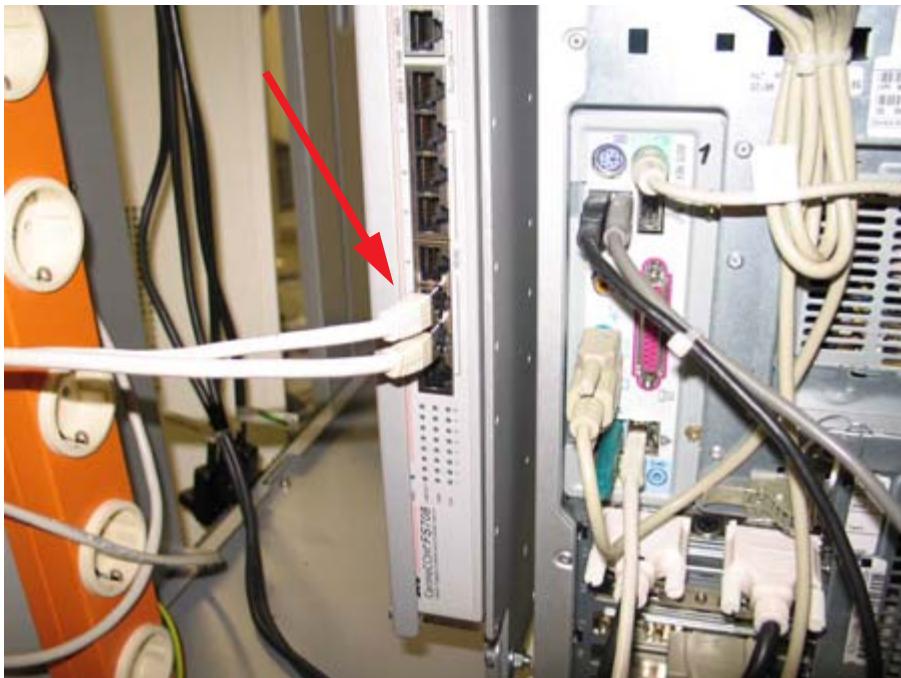


Fig. 34: Network socket 7

- Disconnect the network cable from the PC and plug it into no. 2 in the network hub.
- Plug the drawn-in network cable into no. 3 of the network hub.

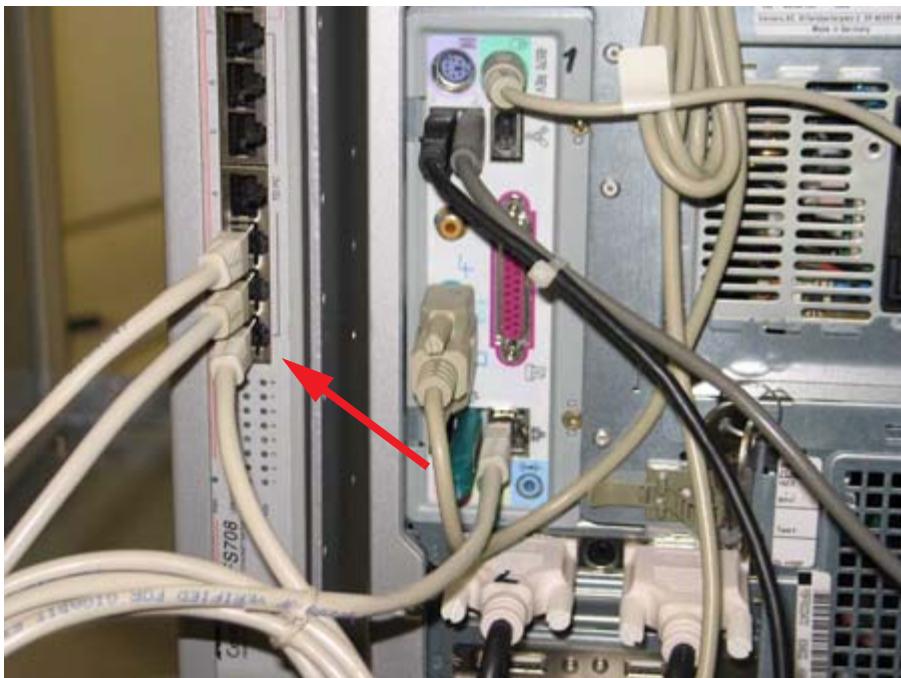


Fig. 35: Network socket 8

- Plug a new network cable into no. 1 in the network hub and the PC network connection.



Fig. 36: Network socket 9

- Plug a power cord into the network hub and the multiple socket outlet.
- Reconnect the two plugs to the UPS.
- Switch the system on.
 - ⇒ The "PWR" diode lights up on the network hub.
 - ⇒ The 3 diodes light up at input no. 1 on the network hub.
- Reattach the monitor cart cover.

Licensing

Loading the license

- Open the syngo service software.



Fig. 37: Home Menu

- Click "Configuration".
- Click "Next".

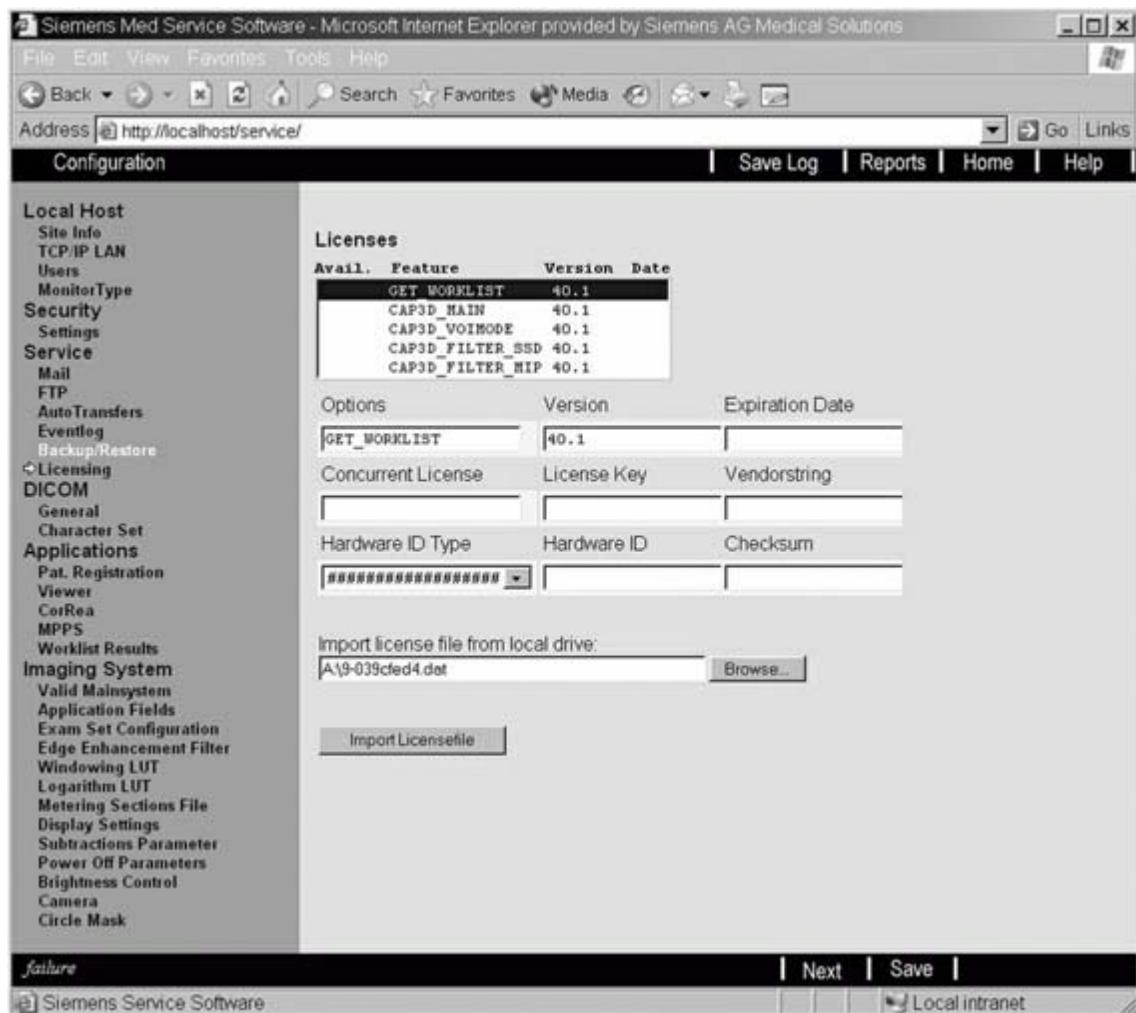


Fig. 38: Service >> Licensing

- Under "Service", click "Licensing".
- Place the CD with the license in the CD-ROM drive and wait until the green lamp on the CD-ROM drive lights up.
- Click "Browse".
- Select the license file on the CD.
- Click "Open".
 - ⇒ The license file is displayed.
- Click on "Import Licensefile".
 - ⇒ The following is displayed:
"Are you sure you want to overwrite the existing license file?"
- Click "OK".
 - ⇒ The following is displayed:
"license data successfully saved"
- Remove the CD.

DICOM configuration

System network configuration

A check is performed to determine whether the system already has a network configuration.

Service software not open

- Open the syngo service software.
- Click "Configuration".
- Click "Next".

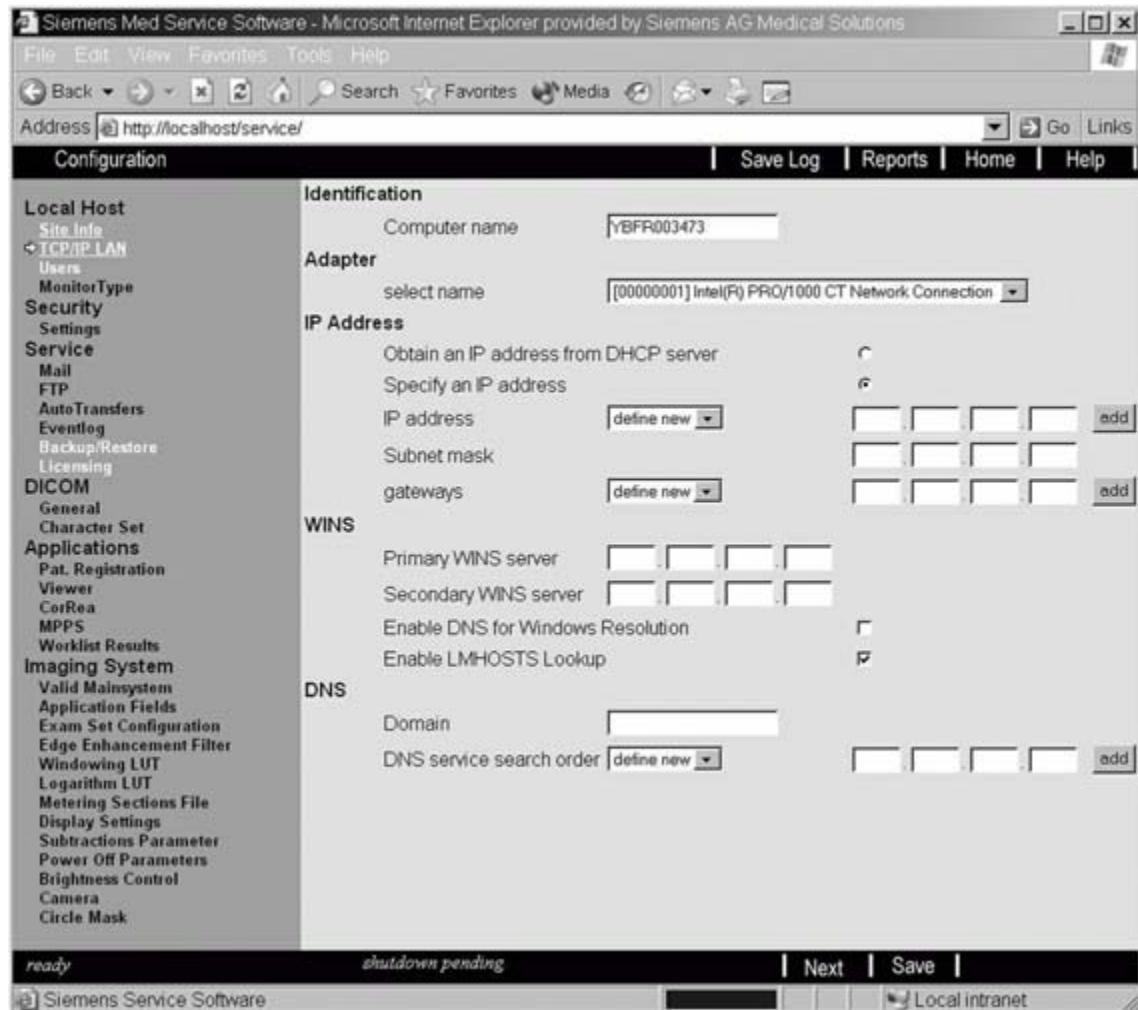


Fig. 39: Local Host >> TCP/IP LAN

Service software open

- Select "TCP/IP LAN" under "Local Host"

Checking the IP address

- Click the selection window under "IP Address".
- If the IP address 192.168.1.1 appears, delete it.

NOTE

If no other IP address is displayed, the system has not yet been assigned its own IP address, and the following IP address should be assigned to it.

If the system has already been assigned an IP address, continue with "Navigation DICOM nodes".

NOTE

A system must never be configured with two IP addresses, since this can lead to software conflicts.

- Select "Specify an IP address".

NOTE

The system cannot be used with a DHCP server.

- Enter 192.17.3.110 as the IP address.
- Enter 255.255.255.0 as the subnet mask.
- Do not select "Enable DNS for Windows resolution".
- Select "Enable LMHOSTS lookup".

WINS

- Do not enter anything under "Primary WINS server".
- Do not enter anything under "Secondary WINS server".
- Do not enter anything under "Gateways".

DNS

- Do not enter anything under "Domain".
- Do not enter anything under "DNS service search order".
- Click "Save".
- Close the service software.
- Switch the system completely off and then back on.
 - This ensures that the configuration is completely saved within syngo.

Navigation DICOM nodes

A default DICOM node is configured for the navigation system.

This may be changed in consultation with the navigation system vendor.

- Open the syngo service software.
- Click "Configuration".
- Click "Next".
- Under "DICOM", select "Network nodes".



Fig. 40: Config_Network_1

- Under "Select Host", select "Define new".

Host properties

- Under "Host Name", enter "Navi".
- Under TCP/IP Address, enter "192.17.3.111".
- Click "Save".
⇒ The following is displayed: "Host properties successfully saved".
- Click "OK".
- Select ">".

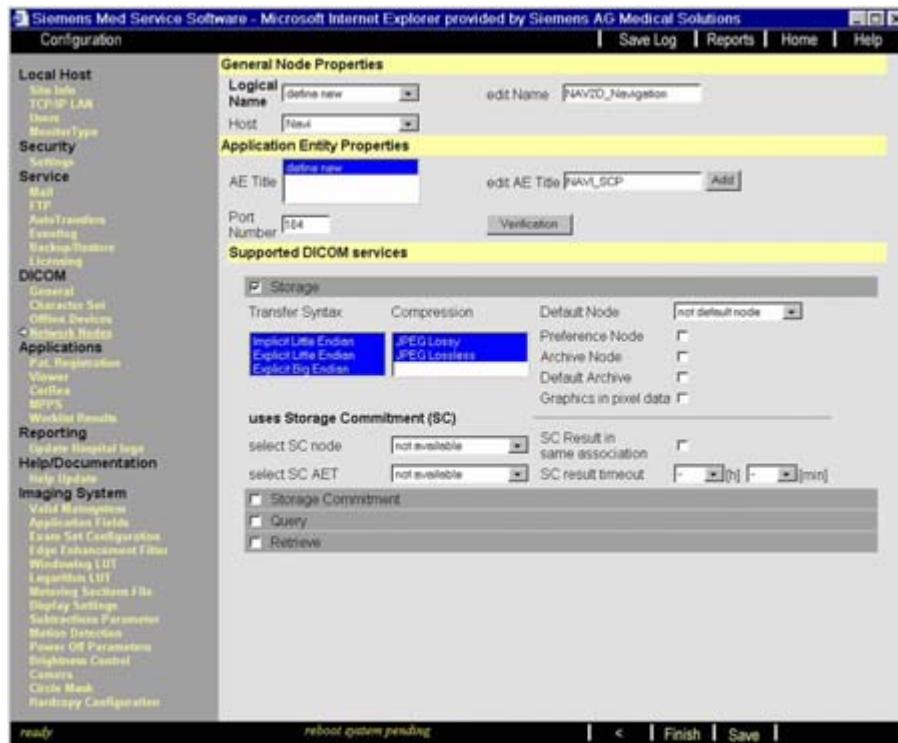


Fig. 41: Config_Network_2D

General node properties

- Under "Logical Name", select "Define new".
- Under "Edit Name", enter "NAV2D_Navigation".

NOTE

Entering "NAV2D_" tells the system that 2D navigation is to be performed. If 3D navigation is also to be performed on the system, follow the instructions in the "Licensing and configuring 3D navigation" chapter.

- Under "Host", select the name "Navi".

Application entity properties

- Under "AE Title", select "Define new".
- Under "Edit AE Title", enter "NAVI SCP".
- Under "Port Number", enter "104".

Supported DICOM services

- Select "Storage".
- Do not make any changes under "Storage".
- Click "Add".
- Click "Save".
 - ⇒ The following is displayed: "DICOM node properties successfully saved".
- Click "OK".
- Click "Home".
 - ⇒ The following is displayed: "A restart of application SW is necessary to make changes valid".
- Click "OK".
- Wait until the application SW has restarted.
- Switch the system completely off and then back on.
 - All configuration data is thus saved within syngo.

Licensing

Loading the license

- Open the syngo service software.

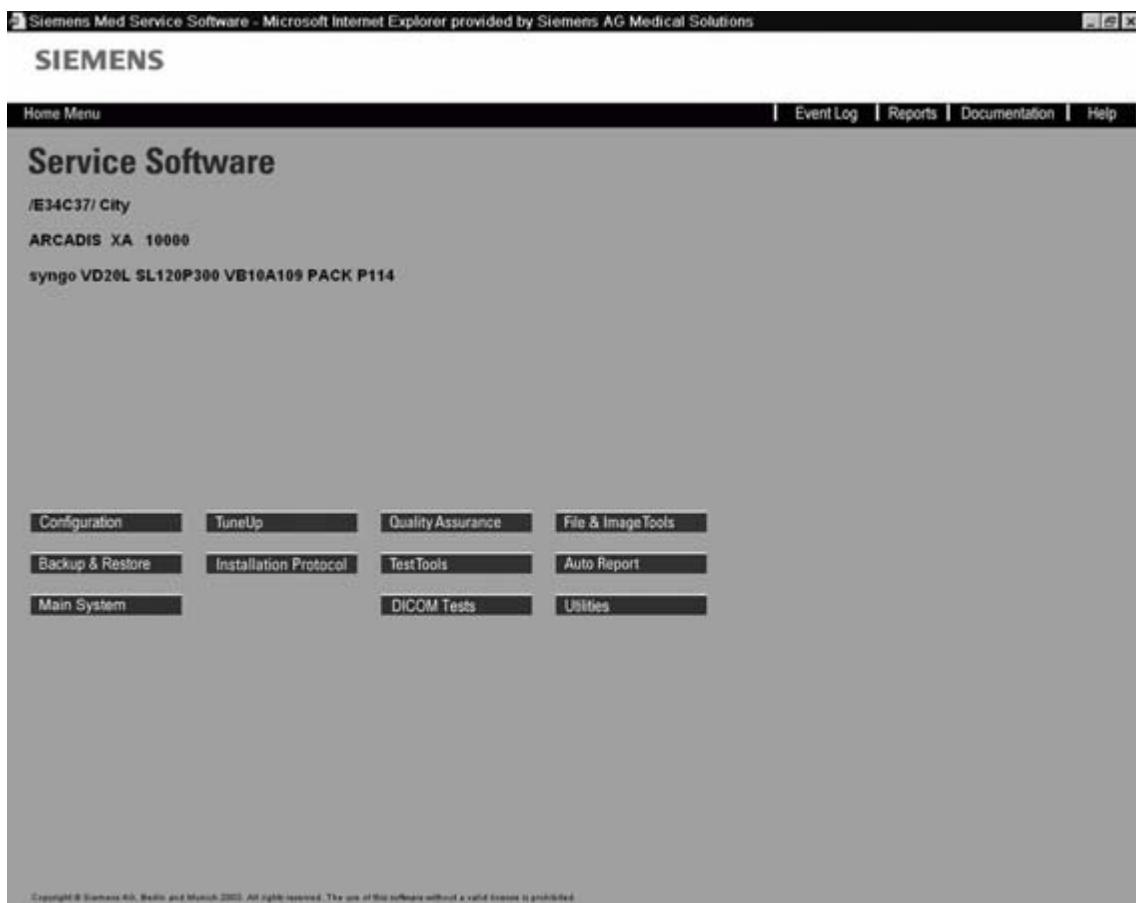


Fig. 42: Home Menu

- Click "Configuration".
- Click "Next".

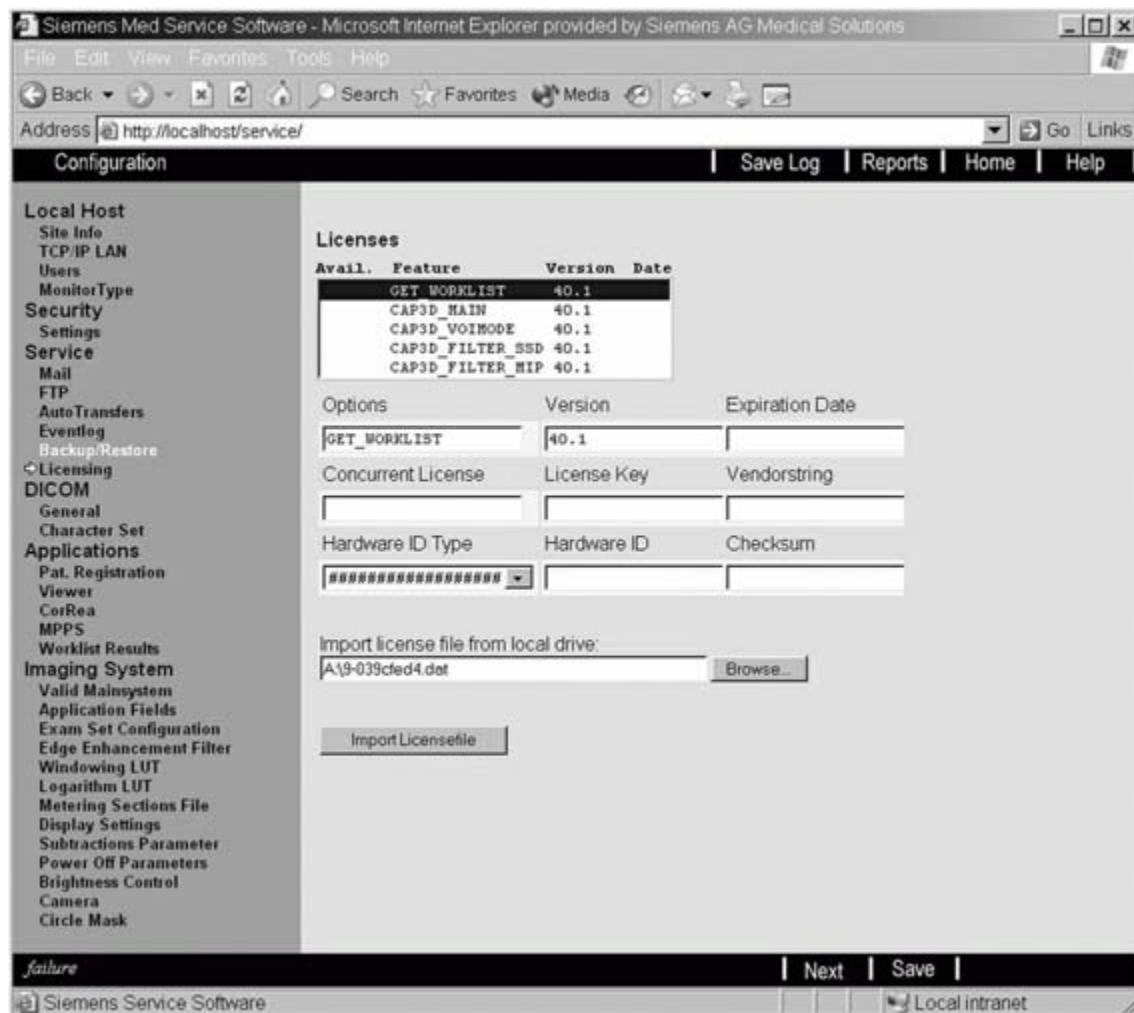


Fig. 43: Service >> Licensing

- Under "Service", click "Licensing".
- Place the CD with the license in the CD-ROM drive and wait until the green lamp on the CD-ROM drive lights up.
- Click "Browse".
- Select the license file on the CD.
- Click "Open".
 - ⇒ The license file is displayed.
- Click "Import Licensefile".
 - ⇒ The following is displayed:
"Are you sure you want to overwrite the existing license file?"
- Click "OK".
 - ⇒ The following is displayed:
"license data successfully saved"
- Remove the CD.

DICOM configuration

System network configuration

A check is performed to determine whether the system already has a network configuration.

Service software not open

- Open the syngo service software.
- Click "Configuration".
- Click "Next".

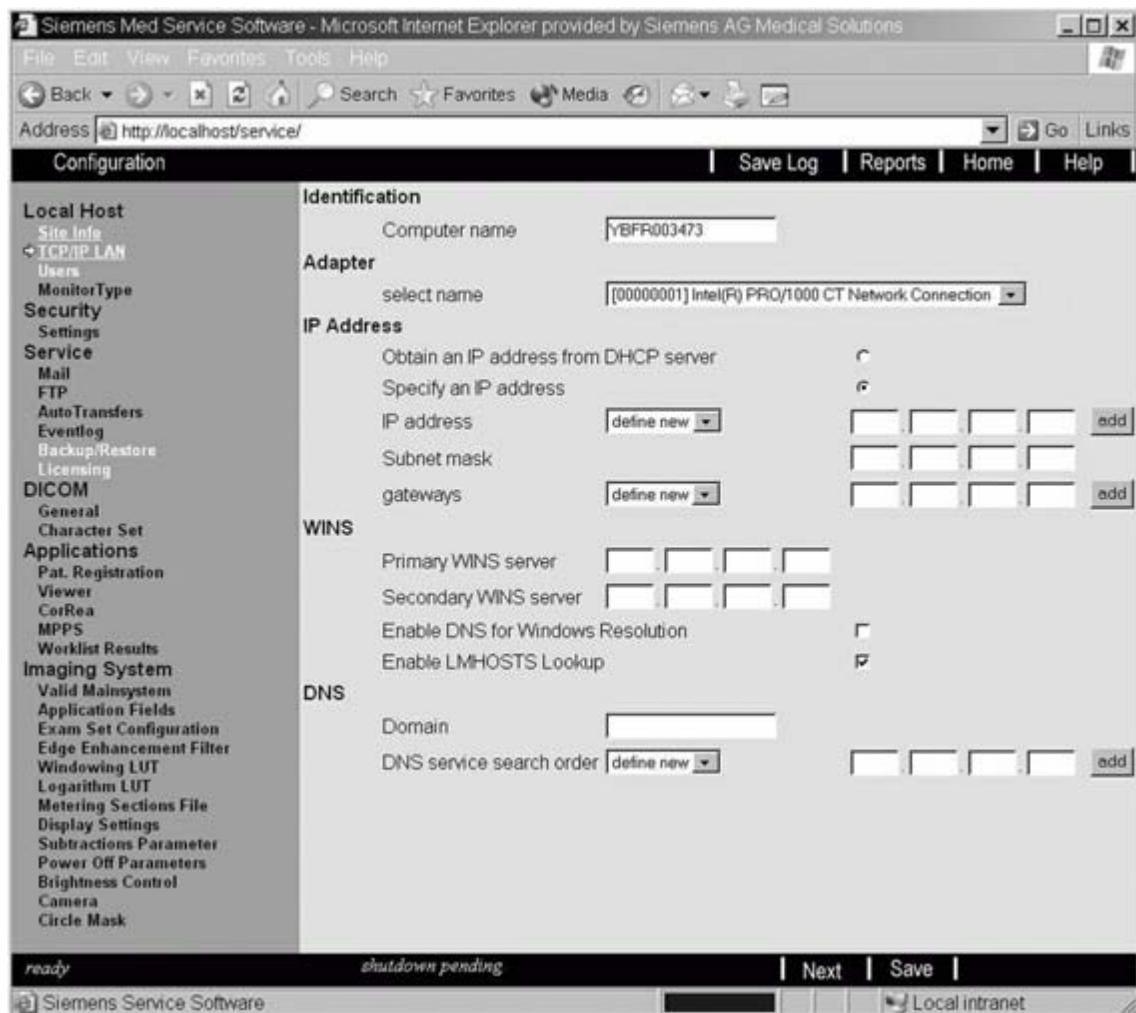


Fig. 44: Local Host >> TCP/IP LAN

Service software open

- Select "TCP/IP LAN" under "Local Host"

Checking the IP address

- Click the selection window under "IP Address".
- If the IP address 192.168.1.1 appears, delete it.

NOTE

If no other IP address is displayed, the system has not yet been assigned its own IP address, and the following IP address should be assigned to it.

If the system has already been assigned an IP address, continue with "Navigation DICOM nodes".

NOTE

A system must never be configured with two IP addresses, since this can lead to software conflicts.

- Select "Specify an IP address".

NOTE

The system cannot be used with a DHCP server.

- Enter 192.17.3.110 as the IP address.
- Enter 255.255.255.0 as the subnet mask.
- Do not select "Enable DNS for Windows resolution".
- Select "Enable LMHOSTS lookup".

WINS

- Do not enter anything under "Primary WINS server".
- Do not enter anything under "Secondary WINS server".
- Do not enter anything under "Gateways".

DNS

- Do not enter anything under "Domain".
- Do not enter anything under "DNS service search order".
- Click "Save".
- Close the service software.
- Switch the system completely off and then back on.
 - This ensures that the configuration is completely saved within syngo.

Navigation DICOM nodes

A default DICOM node is configured for the navigation system.

This may be changed in consultation with the navigation system vendor.

- Open the syngo service software.
- Click "Configuration".
- Click "Next".
- Under "DICOM", select "Network nodes".



Fig. 45: Config_Network_1

- Under "Select Host", select "Define new".

Host properties

- Under "Host Name", enter "Navi".
- Under TCP/IP Address, enter "192.17.3.111".
- Click "Save".
 - ⇒ The following is displayed: "Host properties successfully saved".
- Click "OK".
- Select ">".



Fig. 46: *Config_Network_3D*

General node properties

- Under "Logical Name", select "Define new".
- Under "Edit Name", enter "NAV3D_Navigation".

NOTE

Only when the logical name begins with "NAV3D_" does the navigation configuration appear in the calibration screen.

- Under "Host", select the name "Navi".

Application entity properties

- Under "AE Title", select "Define new".
- Under "Edit AE Title", enter "NAVI_SCP".
- Under "Port Number", enter "104".

Supported DICOM services

- Select "Storage".
- Do not make any changes under "Storage".
- Click "Add".
- Click "Save".
 - ⇒ The following is displayed: "DICOM node properties successfully saved".
- Click "OK".
- Click "Home".
 - ⇒ The following is displayed: "A restart of application SW is necessary to make changes valid".
- Click "OK".
- Wait until the application SW has restarted.
- Switch the system completely off and then back on.
 - All configuration data is thus saved within syngo.

Positioning

- Take the stand out of the "calibration phantom service case".
- Attach the calibration phantom to the stand.

Systems equipped with a laser light localizer

- Position the calibration phantom in the C-arm.



Fig. 47: *Navigation_calibration_phantom*

- Using the light laser localizer, align the C-arm correctly with respect to the markings on the calibration phantom, first in the vertical and then in the horizontal C-arm position.



Fig. 48: 02_Positioning_calibration_phantom



Fig. 49: 03_Positioning_calibration_phantom

Systems not equipped with a laser light localizer

- Position the calibration phantom in the C-arm.
- Align the C-arm correctly with respect to the markings on the calibration phantom, first in the vertical and then in the horizontal C-arm position.
To this end, release a brief exposure and check the position of the C-arm with respect to the calibration phantom.

Checking the positioning

- Ensure that the calibration phantom is positioned in the isocenter. To do so, check both the horizontal and vertical adjustment at least twice.
 - ⇒ When the calibration phantom is positioned correctly, the points of the ball pattern will not be visible at the upper and lower image edges.
See picture below.

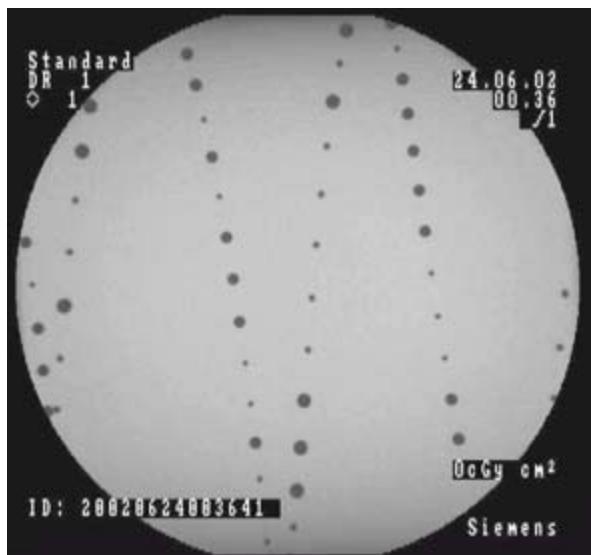


Fig. 50: adjustment

Calibration

NOTE

Here, perform only the calibration without the image intensifier navigation marker ring.

The calibration with the image intensifier navigation marker ring is performed by a trained BrainLAB technician.

- Open syngo service software.

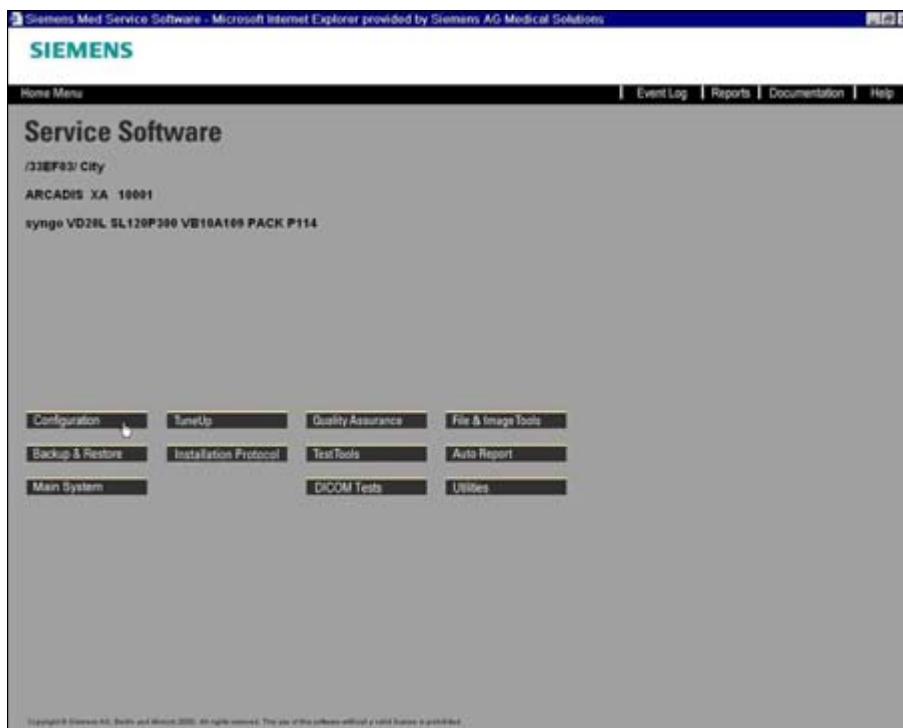


Fig. 51: Home menu

- Click "Main system".

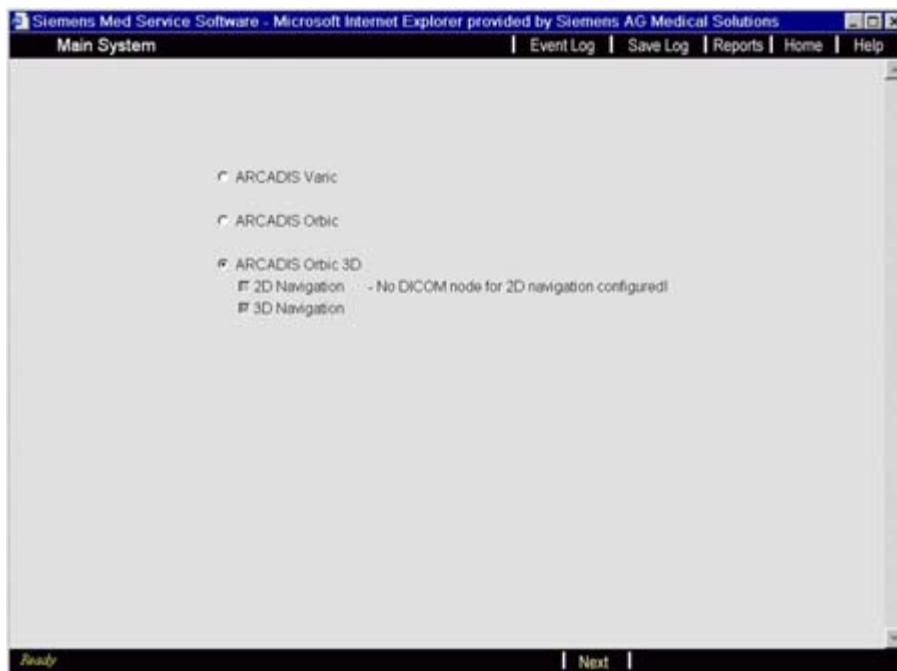


Fig. 52: calibration_1

- Click "Next".



Fig. 53: calibration_2

- Under "3D Calibration", select the item "Orbic 3D".
 - ⇒ The following is displayed: "Last successful calibration was on:
....."

- Click "OK".
- Move the C-arm to the position indicated on the monitor.

NOTE

The individual work steps are described in the "Description field" as well.

- Click "Go"

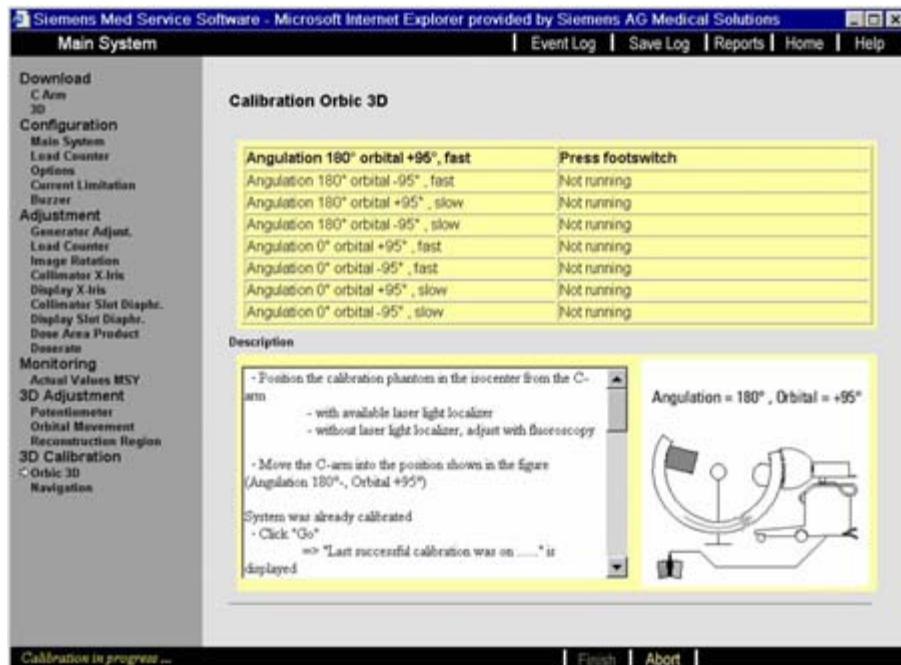


Fig. 54: calibration_4_Orbic3D

- Press the left footswitch until the first four calibrations are performed.

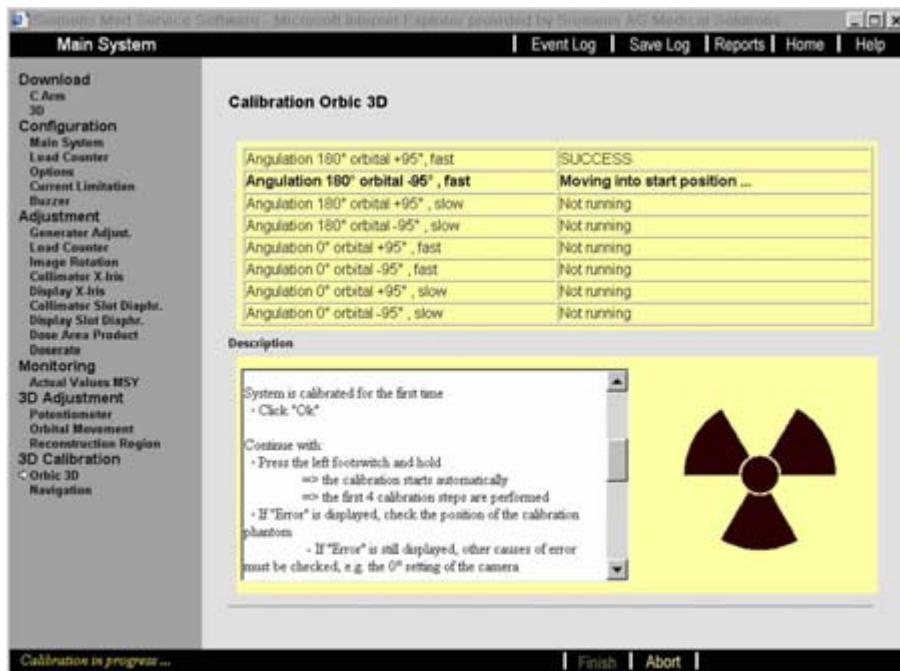


Fig. 55: calibration_5_Orbic3D

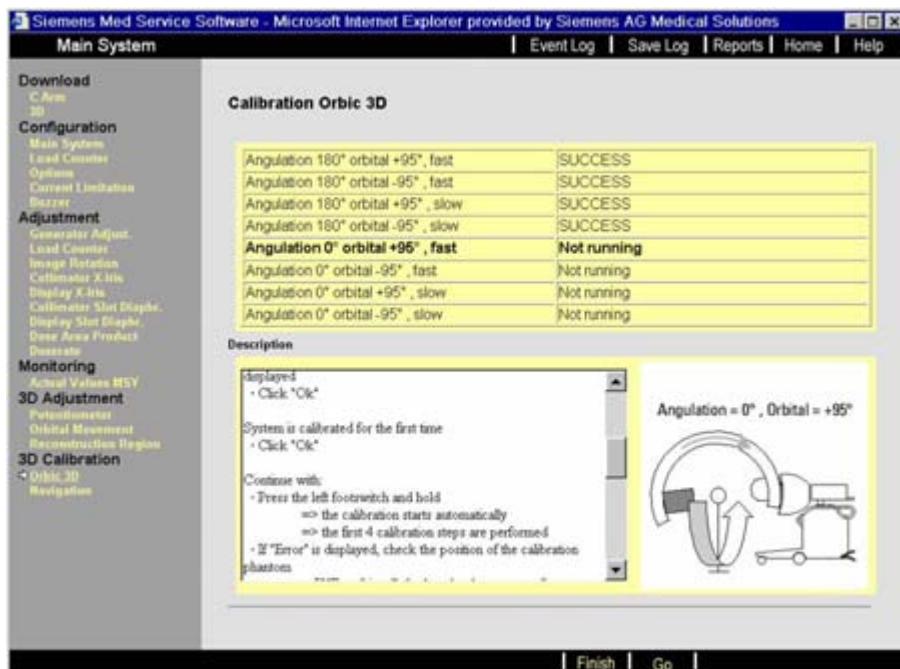


Fig. 56: calibration_6_Orbic3D

- Move the C-arm to the position indicated on the monitor.
- Check the position of the calibration phantom once more.
- Press the left footswitch until the last four calibrations are performed.

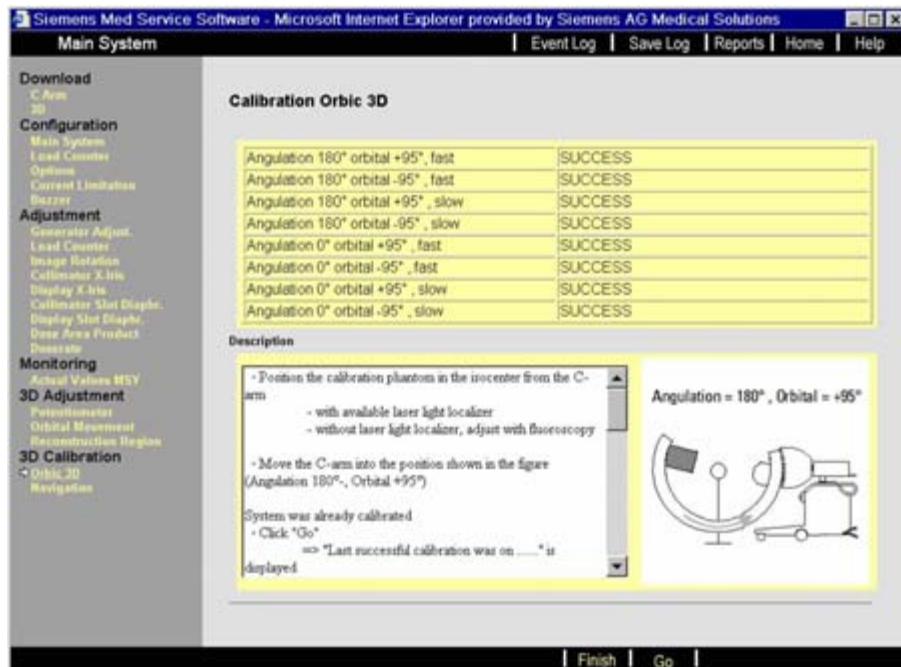


Fig. 57: calibration_3_Orbic3D

NOTE

This concludes the Orbic 3D calibration.

Image quality test

Preparation

- Place the C-arm in the horizontal position with the image intensifier toward the main unit.



Fig. 58: Side view of the test setup

- Mount the resolution test horizontally on the stand for the calibration phantom.

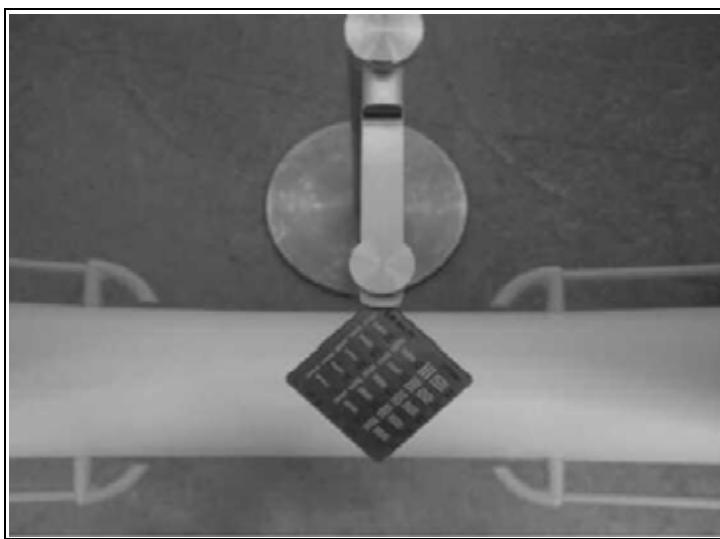


Fig. 59: Top view of the test setup

- Position the resolution test in the isocenter of the C-arm.

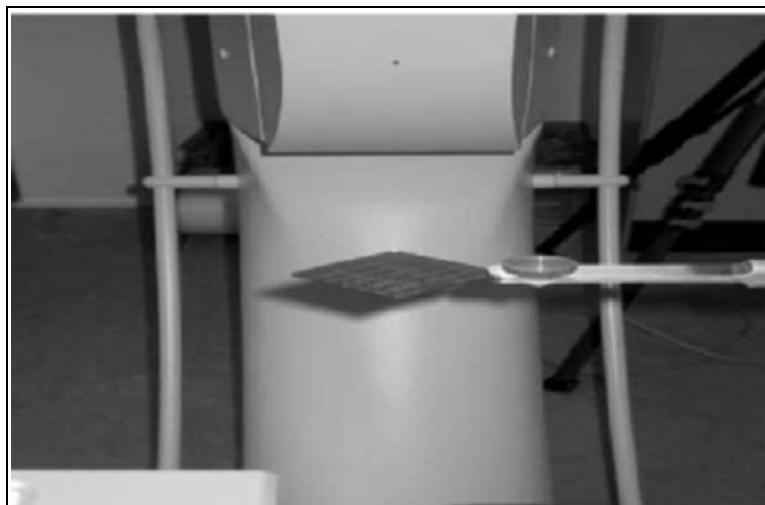


Fig. 60: Test setup as viewed from the I.I.

- Use the laser light localizer, if one is installed, to determine the isocenter.

Testing procedure

- Start the 3D scan by pressing the 3D button on the acquisition task card.

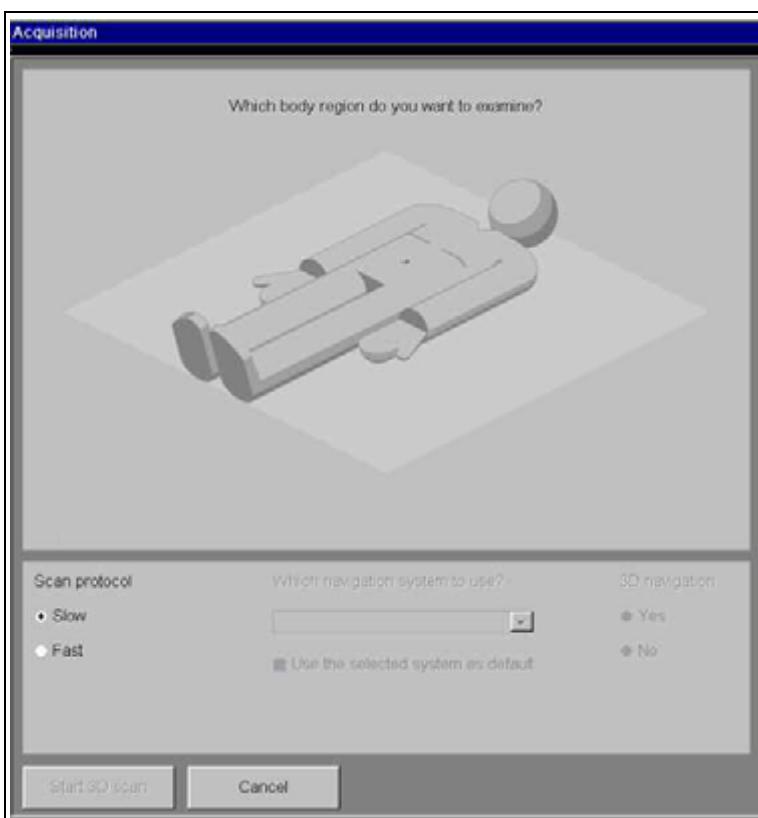


Fig. 61: Orientation menu

- Select the thorax.

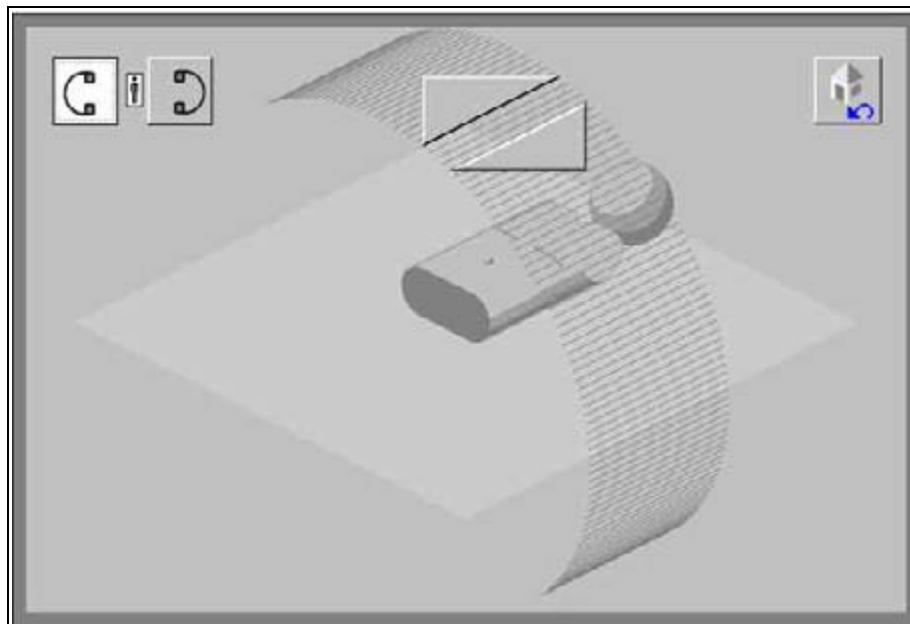


Fig. 62: Dialog box for patient position and beam direction

- Select the C-arm position.

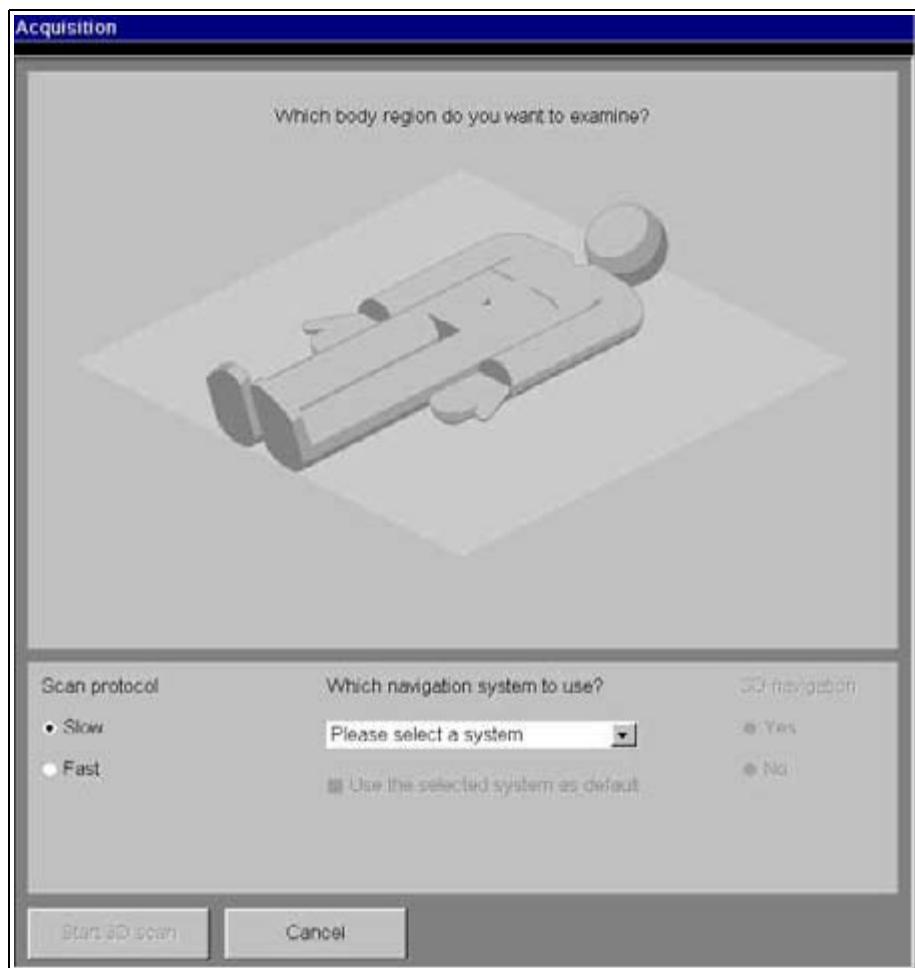


Fig. 63: Image 1

- Under “Scan Protocol”, select “Slow”.
- Under “Which navigation system to use?” select “none”.
- Click “Start 3D scan”.

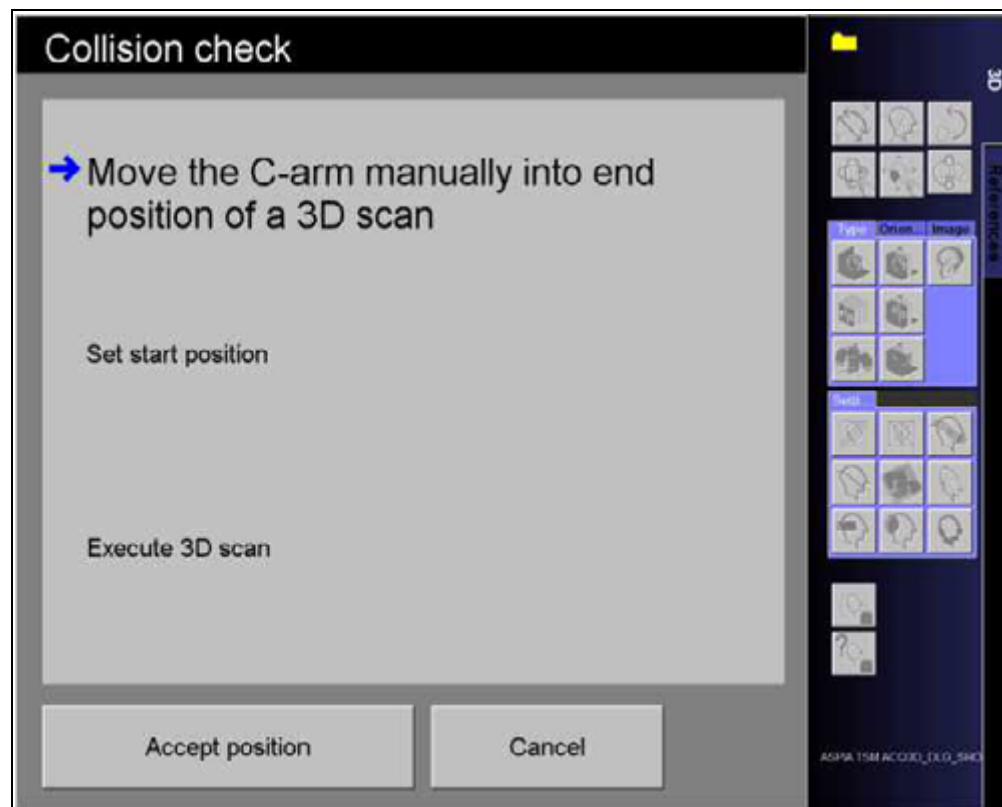


Fig. 64: Image 2

- Manually move the C-arm to the end position (to the limit switch).
 - The X-ray tube is then on the main unit.

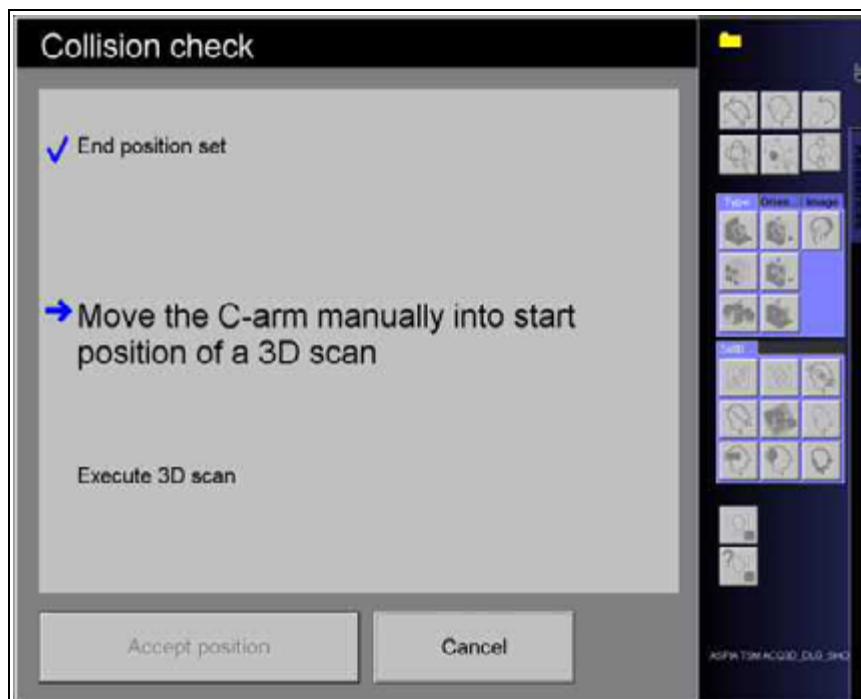


Fig. 65: Image 3

- Manually move the C-arm to the start position (to the limit switch).
 - The image intensifier is then on the main unit.

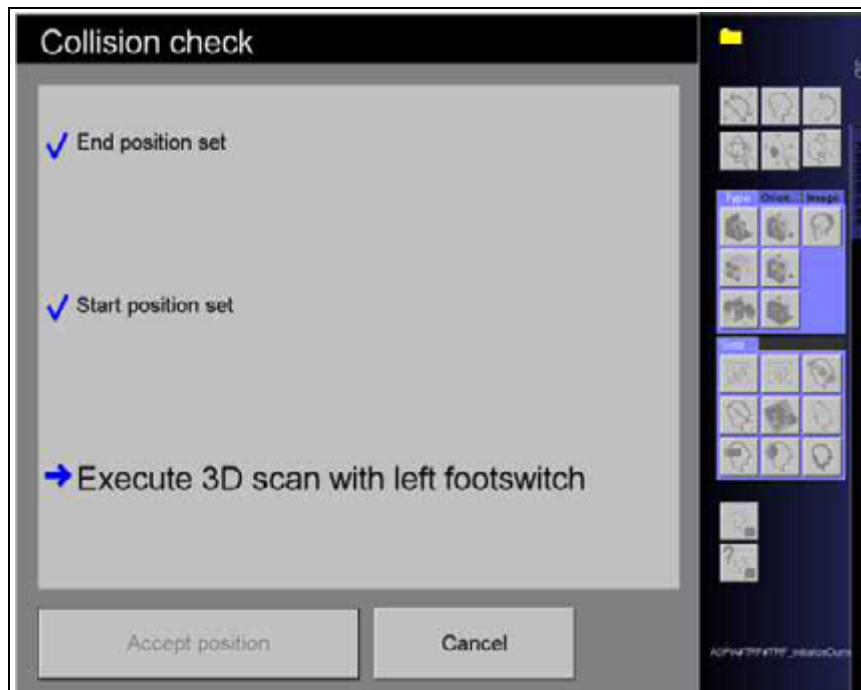


Fig. 66: Image 4

Measurement run

- Press the left footswitch; this starts the 3D scan.
- Hold the foot switch down until the scan is complete (approx. 1 minute)
- Check the left monitor to see whether the resolution test remains in the isocenter.
- If the object position moves significantly out of the isocenter, the measurement must be stopped and the object must be repositioned.
- Release the footswitch when the scan is complete.
 - ⇒ When the acquisition is complete, the reconstructed volume appears automatically on the 3D task card.

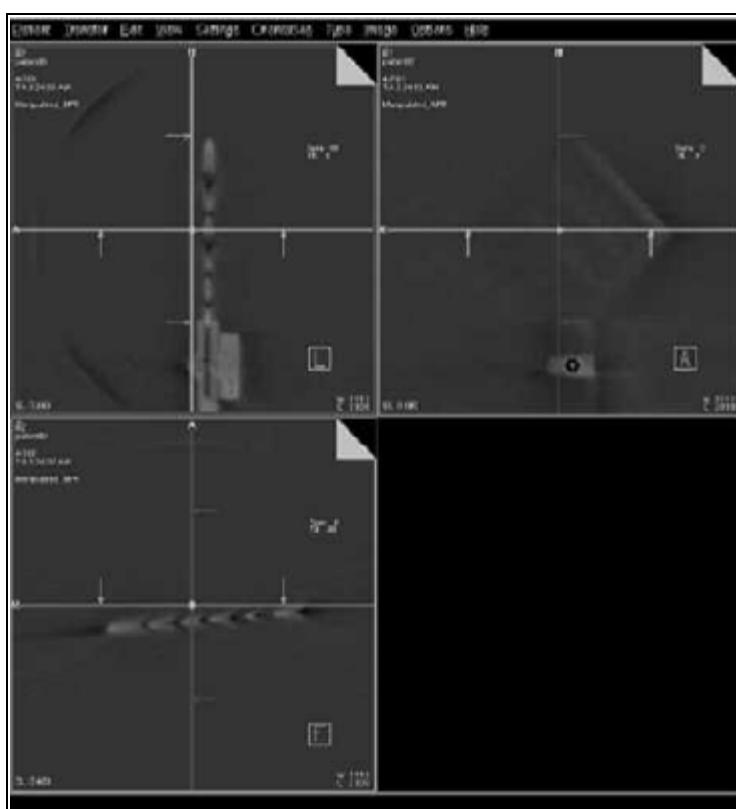


Fig. 67: *syngo image after successful recording and reconstruction*

Checking 3D high resolution

Target:

Determine the optimal slice plane for representing the lead strip test in the syngo window.

In upper left-hand window:

- Use the vertical selection bar to select the the plane that passes directly through the lead strip test.
- Then use the horizontal bar to select a slice plane in the center of the lead line grid

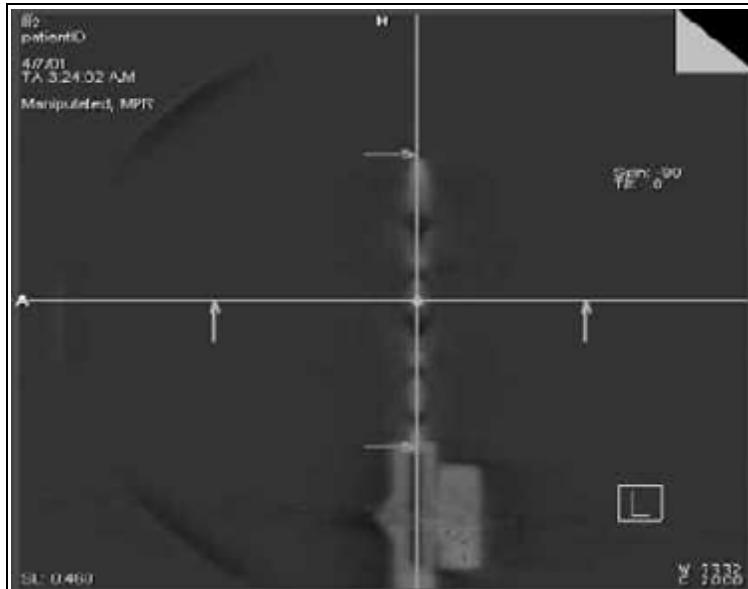


Fig. 68: Setting the slice plane in the top left window

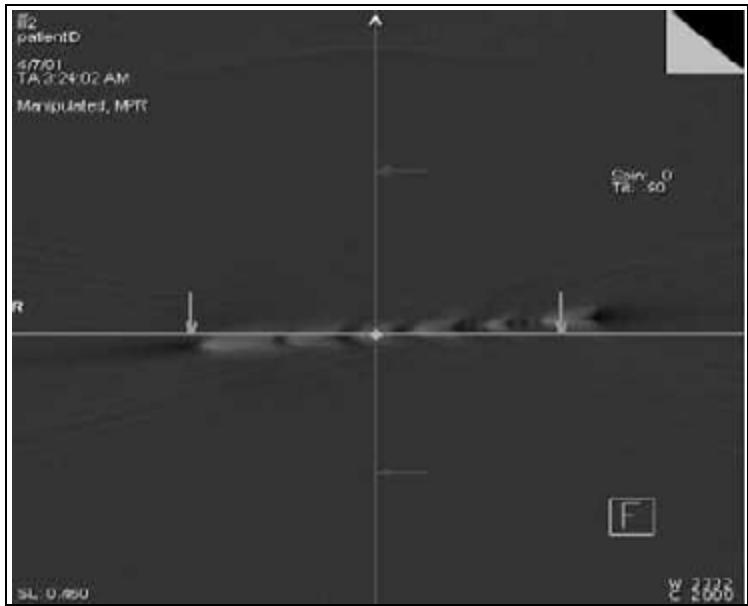


Fig. 69: Slice plane in the bottom left window

- If the lead strip test pattern is slanted in relation to the floor plane, correct this by rotating the slice plane in Free Mode.

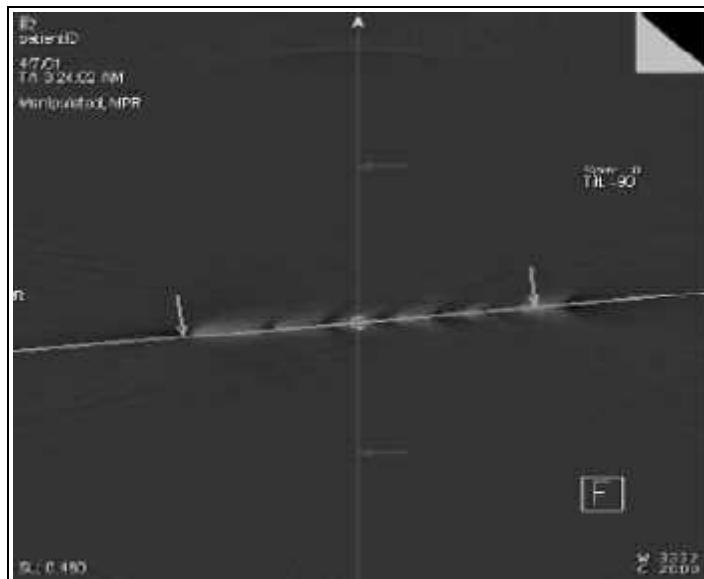


Fig. 70: Rotating the slice plane

⇒ A syngo image should show a slice plane parallel to the lead line grid.

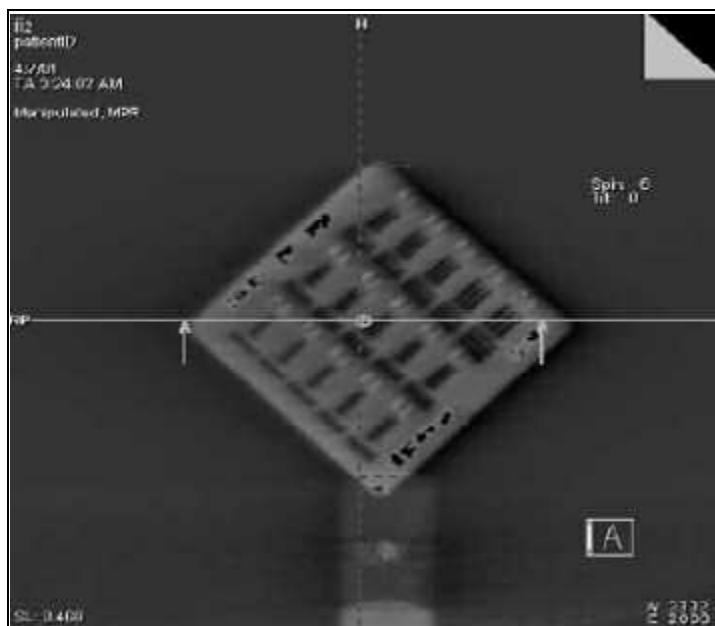


Fig. 71: Plane parallel to the lead strip test

- Double-click this image.

⇒ A full-field image is displayed.

- Check the 3D high resolution (1 LP/mm should be attained).
It may be necessary to use the appropriate mouse button to return to a previous window.

NOTE

If 3D high resolution is not achieved, the calibration must be performed again.

Notify BrainLAB

- Fill out the fax form contained in the attachment.
- Fax it to the appropriate organizational unit at BrainLAB.
 - This notifies BrainLAB that they can now install the navigation system.

NOTE

From Siemens' perspective, this concludes the process of installing the BrainLAB navigation system.

Calibration without a navigation technician

NOTE

This calibration is performed during the first installation service call for the navigation system.

The technician from the navigation company is not present during this service call.

- Open the syngo service software.

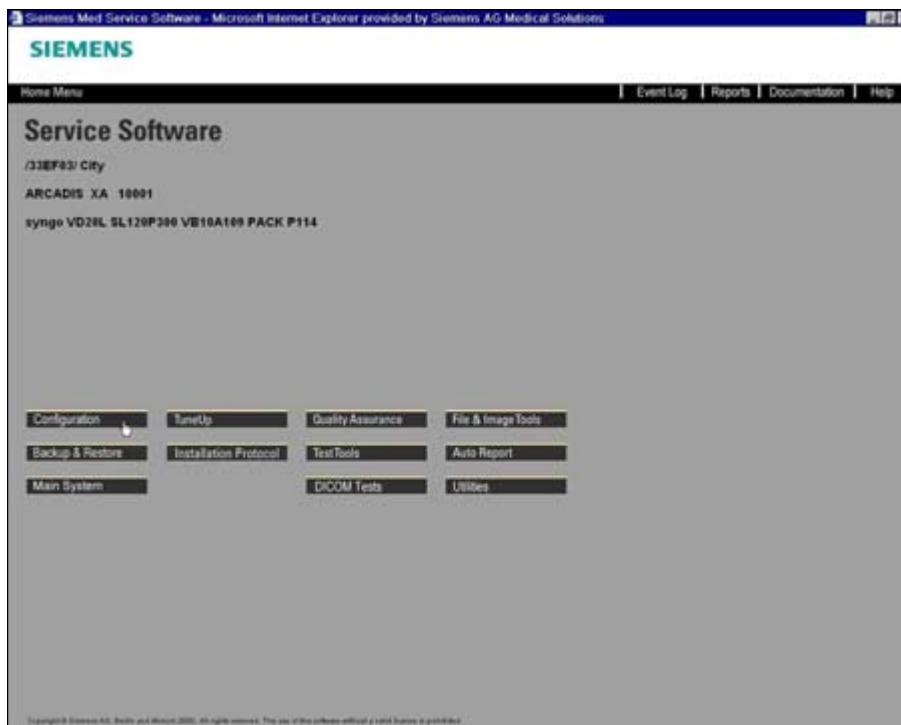


Fig. 72: Home menu

- Click "Main system".



Fig. 73: calibration_1

- Click "Next".



Fig. 74: calibration_2

- Under "3D Calibration", select "Orbic 3D".
 - ⇒ The following is displayed: "Last successful calibration was on:
....."

- Click "OK".
- Move the C-arm to the position indicated on the monitor.

NOTE

The individual work steps are also described in the "Description" field.

- Click "Go".

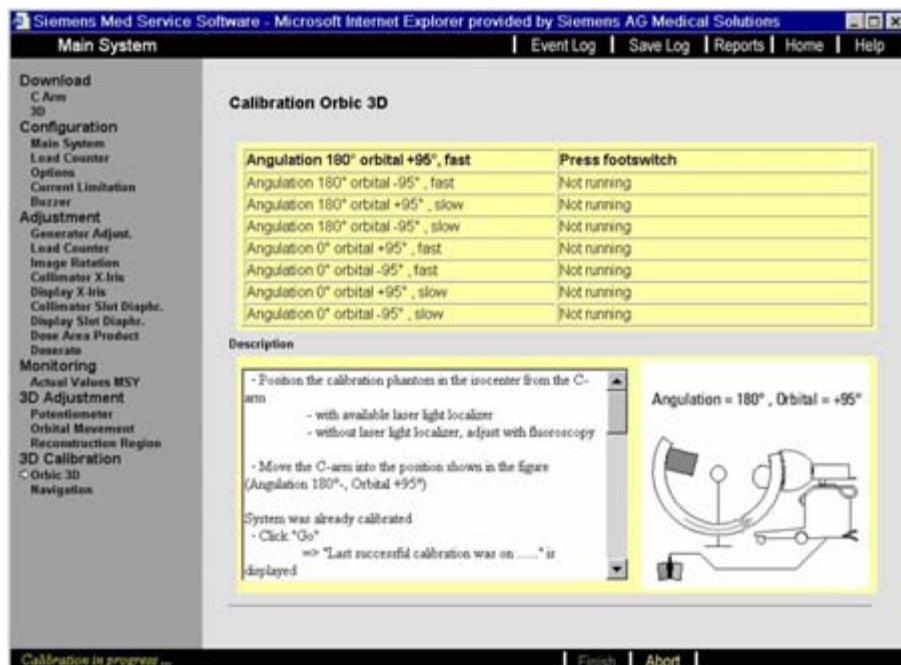


Fig. 75: calibration_4_Orbic3D

- Press the left footswitch until the first four calibrations are performed.

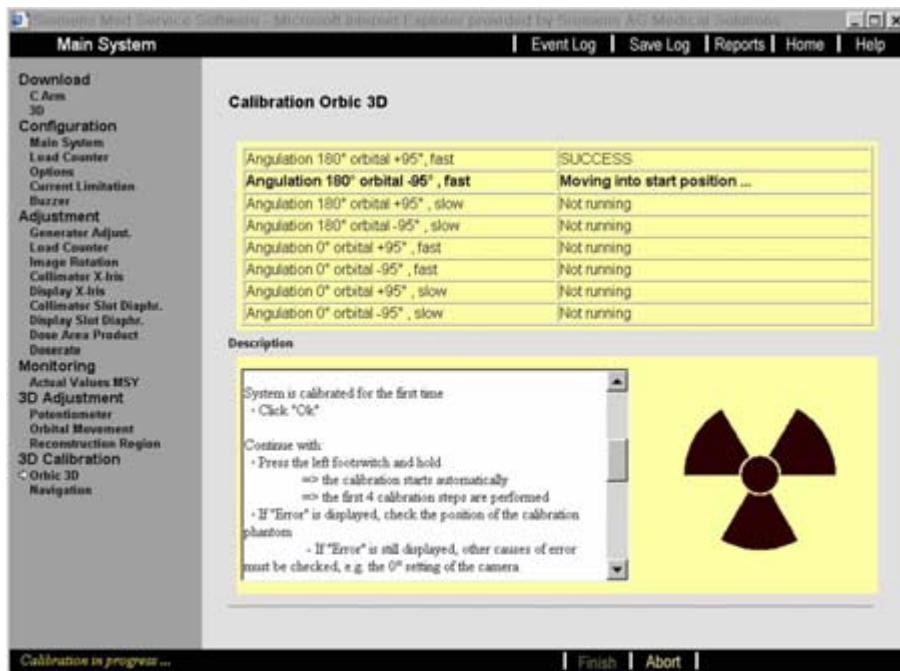


Fig. 76: calibration_5_Orbic3D

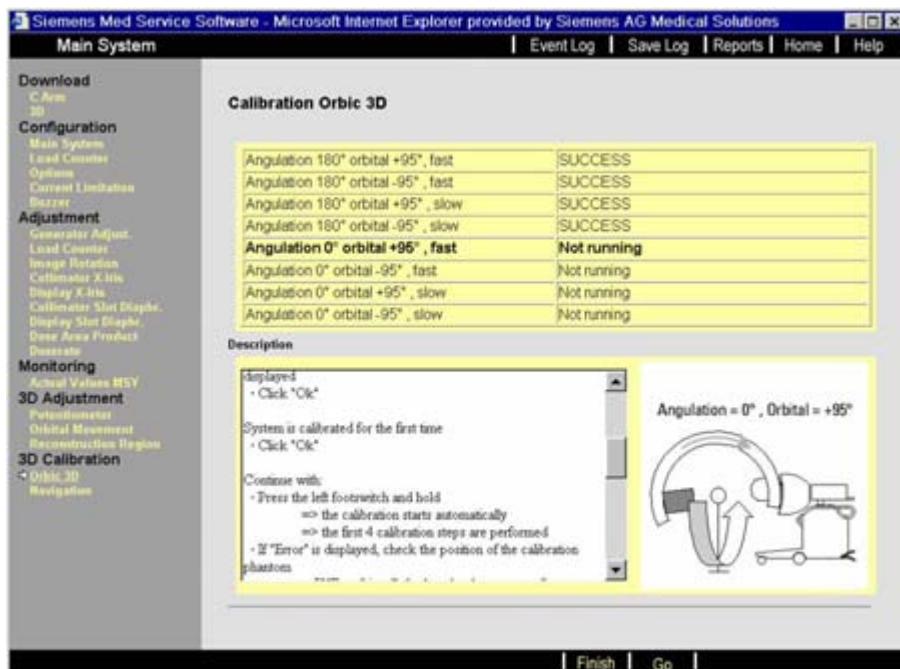


Fig. 77: calibration_6_Orbic3D

- Move the C-arm to the position indicated on the monitor.
- Check the position of the calibration phantom once more.
- Press the left footswitch until the last four calibrations are performed.

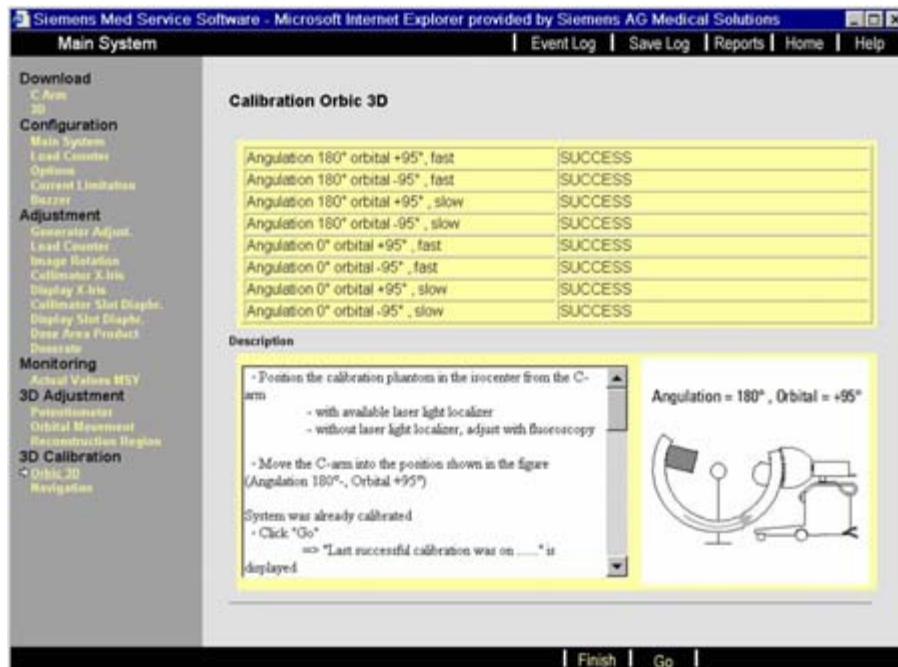


Fig. 78: calibration_3_Orbic3D

NOTE

This concludes the Orbic 3D calibration.

Calibration with a navigation technician

NOTE

This calibration is performed during the second installation service call for the navigation system.

The technician from the navigation company is present during this service call.

- Open the syngo service software.

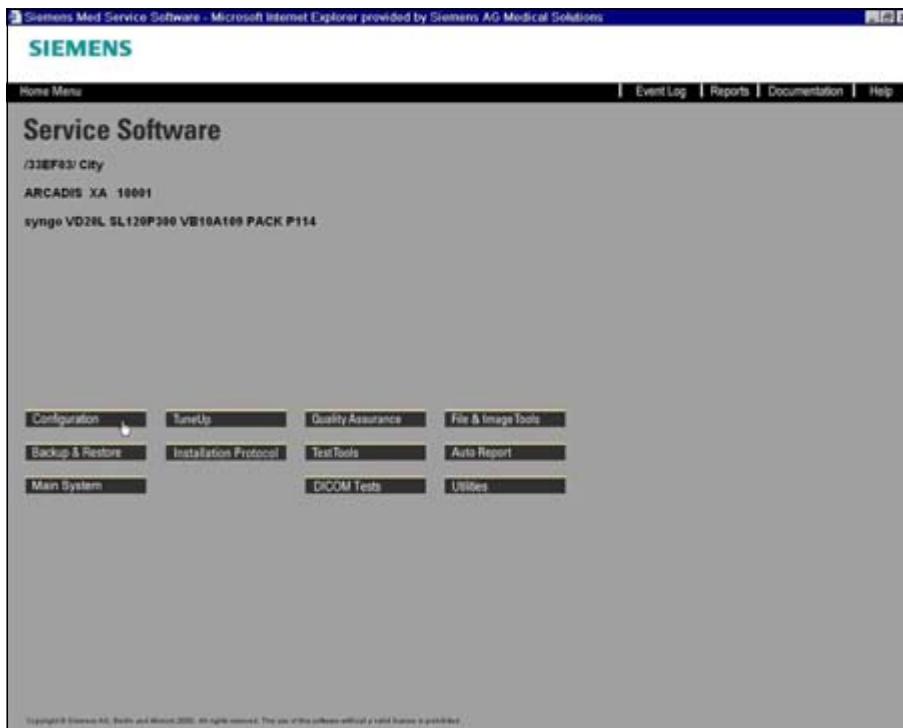


Fig. 79: Home menu

- Click "Main system".

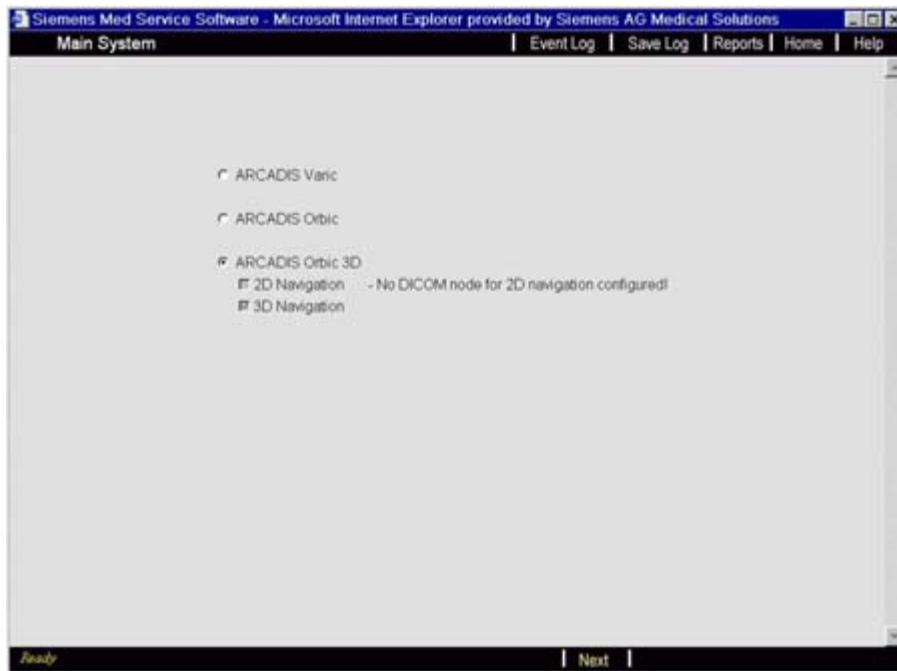


Fig. 80: calibration_1

- Click "Next".



Fig. 81: calibration_2

- Under "3D Calibration", select "Navigation".

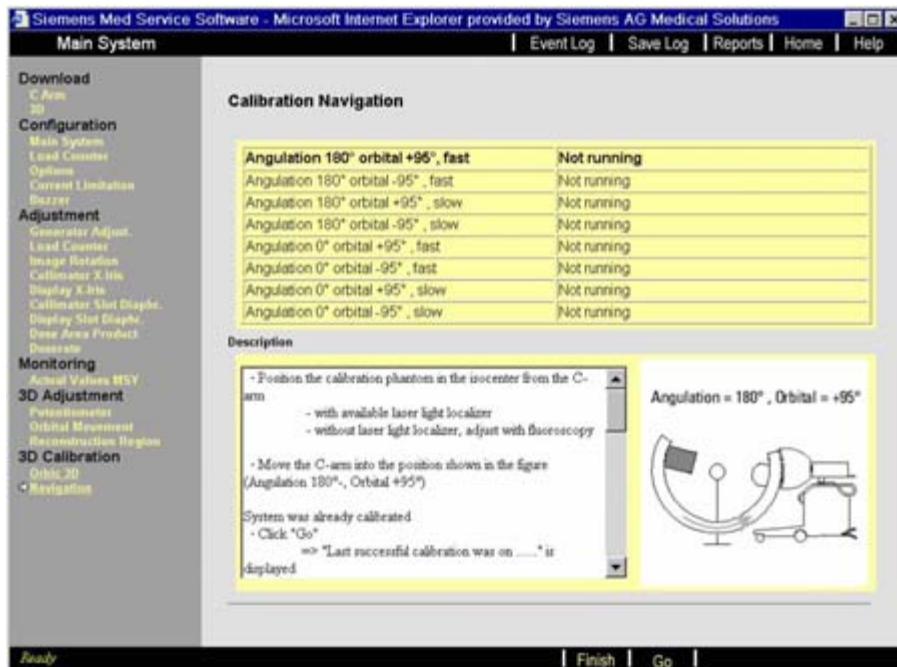


Fig. 82: calibration_3_Navigation

- Move the C-arm to the position indicated on the monitor.

NOTE

The individual work steps are also described in the "Description" field.

- Click "Go".
- Press the left footswitch until the first four calibrations are performed.
- Move the C-arm to the position indicated on the monitor.
- Check the position of the calibration phantom once more.
- Press the left footswitch until the last four calibrations are performed.

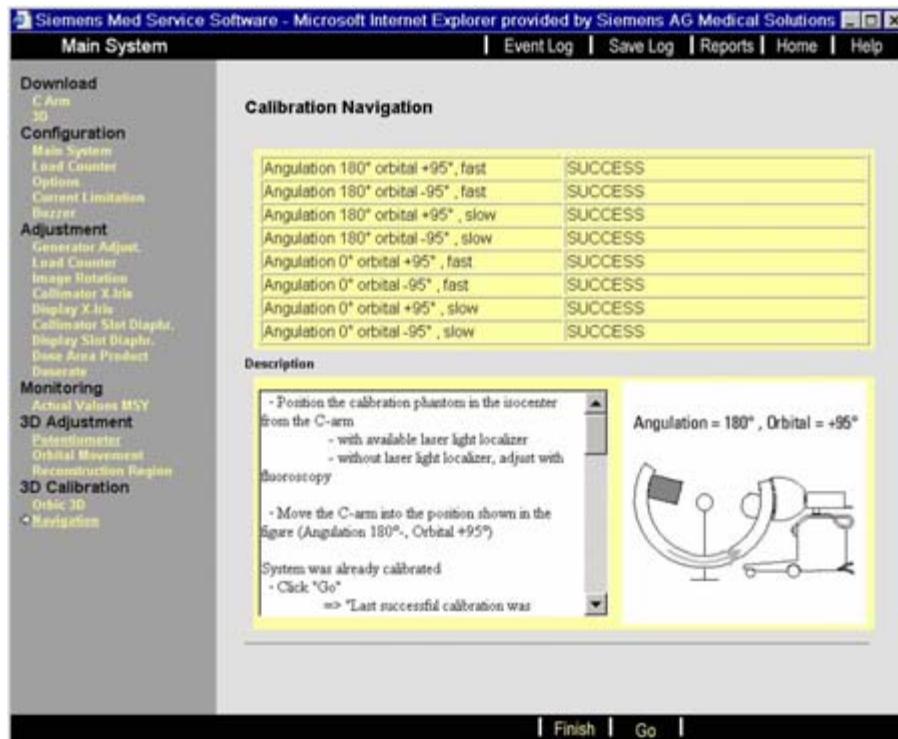


Fig. 83: calibration_navigation_success

NOTE

This concludes the "Navigation" calibration.

Image quality test

Preparation

- Place the C-arm in the horizontal position with the image intensifier toward the main unit.



Fig. 84: Side view of the test setup

- Mount the resolution test horizontally on the stand for the calibration phantom.

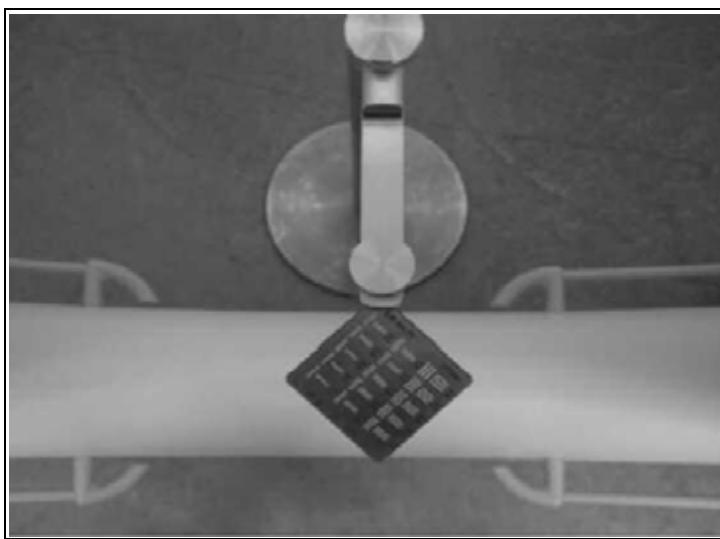


Fig. 85: Top view of the test setup

- Position the resolution test in the isocenter of the C-arm.

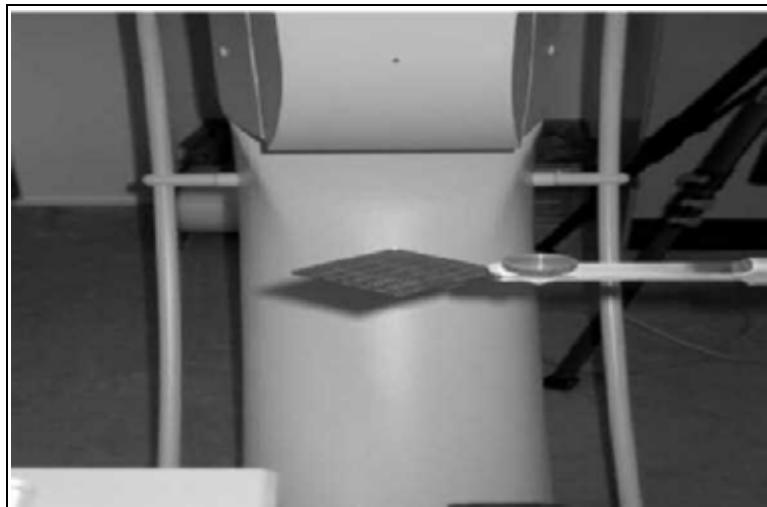


Fig. 86: Test setup as viewed from the I.I.

- Use the laser light localizer, if one is installed, to determine the isocenter.

Testing procedure

- Start the 3D scan by pressing the 3D button on the acquisition task card.

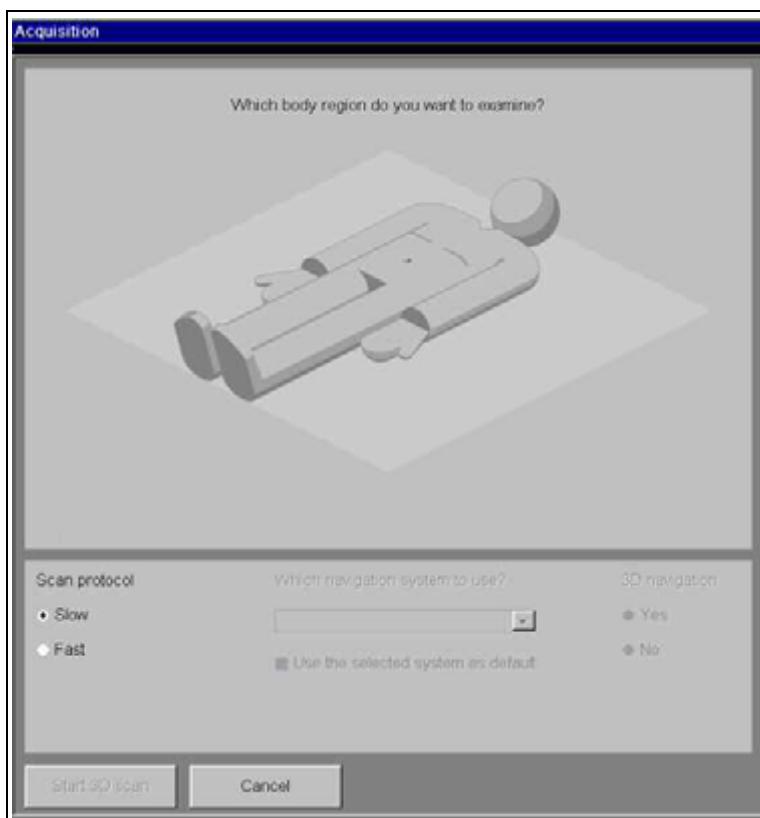


Fig. 87: Orientation menu

- Select the thorax.

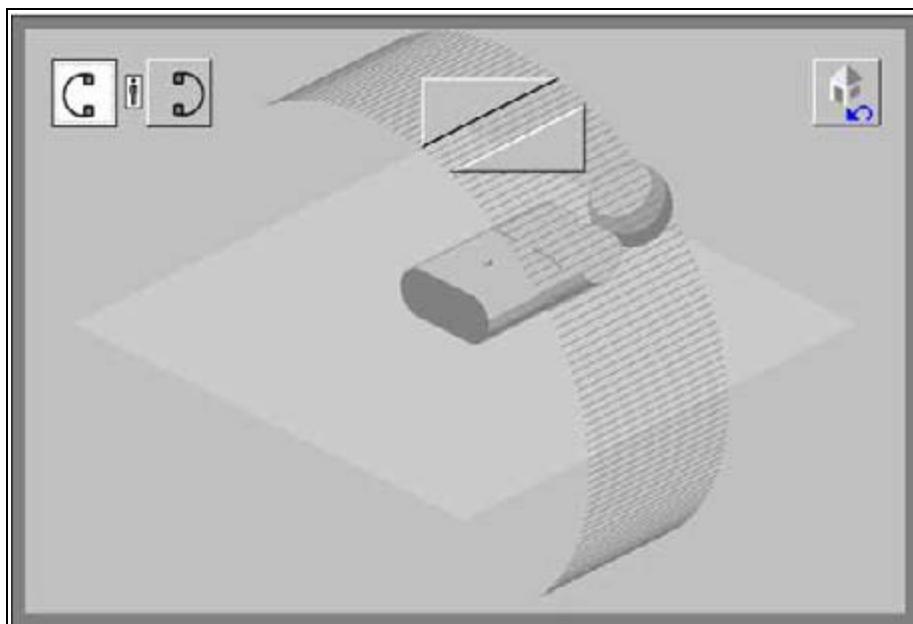


Fig. 88: Dialog box for patient position and beam direction

- Select the C-arm position.

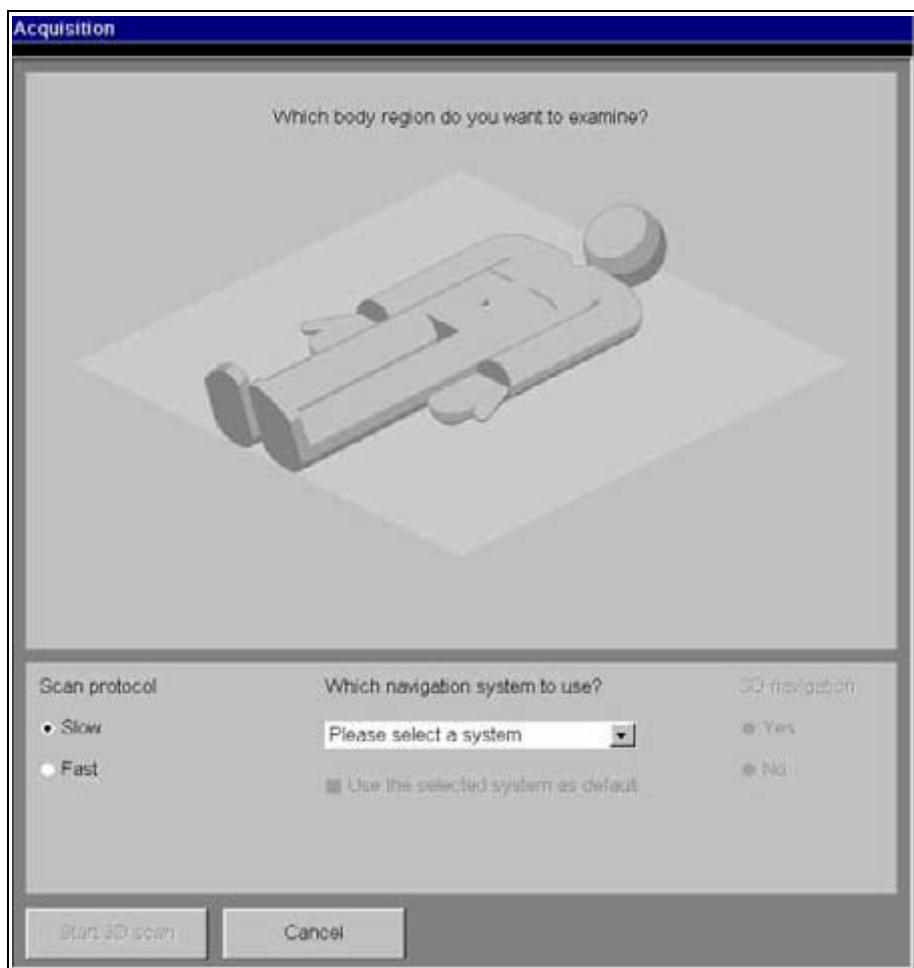


Fig. 89: Image 1

- Under “Scan Protocol”, select “Slow”.
- Under “Which navigation system to use?”, select the proper navigation system.
- Click “Start 3D scan”.

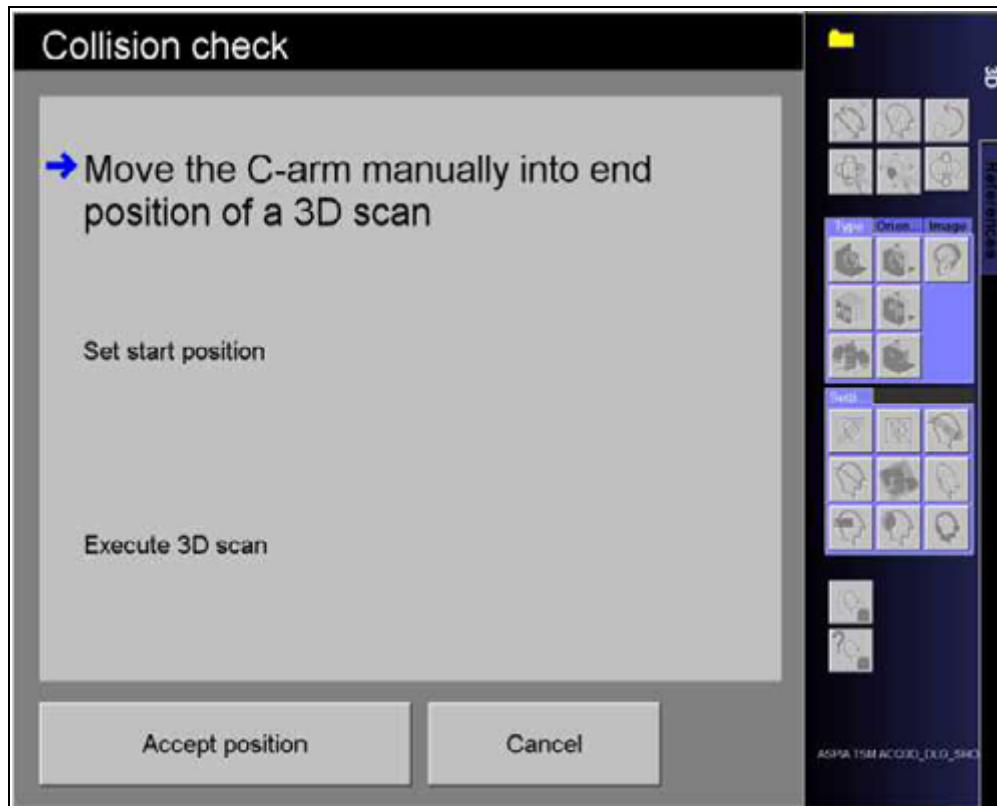


Fig. 90: Image 2

- Manually move the C-arm to the end position (to the limit switch).
 - The X-ray tube is then on the main unit.

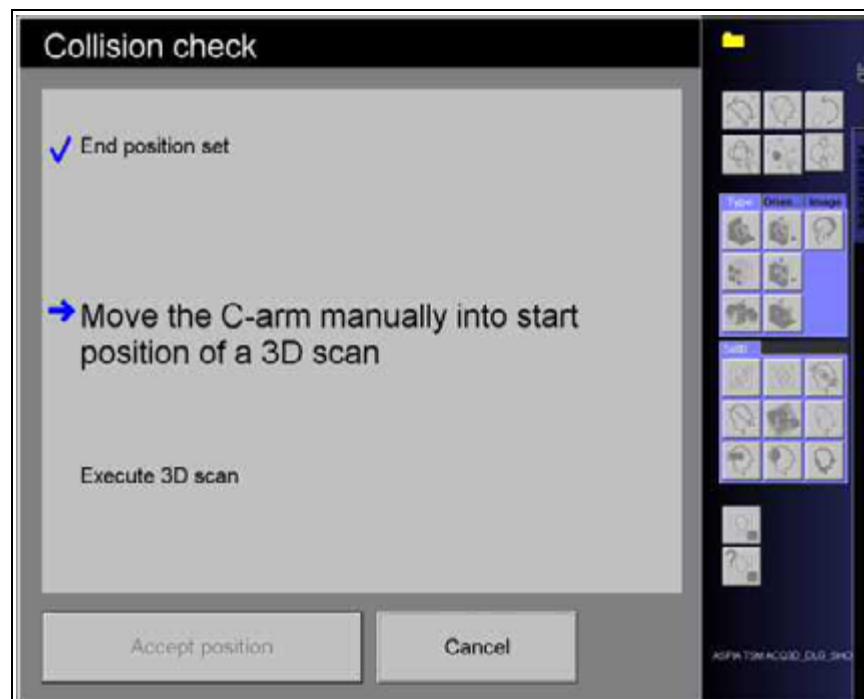


Fig. 91: Image 3

- Manually move the C-arm to the start position (to the limit switch).
 - The image intensifier is then on the main unit.

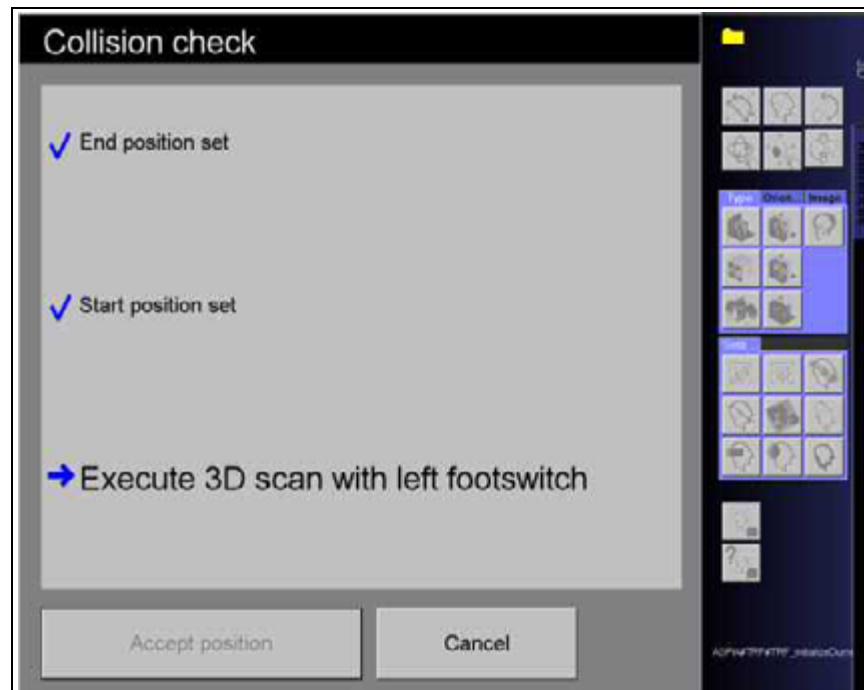


Fig. 92: Image 4

Measurement run

- Press the left footswitch; this starts the 3D scan.
- Hold the foot switch down until the scan is complete (approx. 1 minute).
- Check the left monitor to see whether the resolution test remains in the isocenter.
- If the object position moves significantly out of the isocenter, the measurement must be stopped and the object must be repositioned.
- Release the footswitch when the scan is complete.
 - ⇒ When the acquisition is complete, the reconstructed volume appears automatically on the 3D task card.

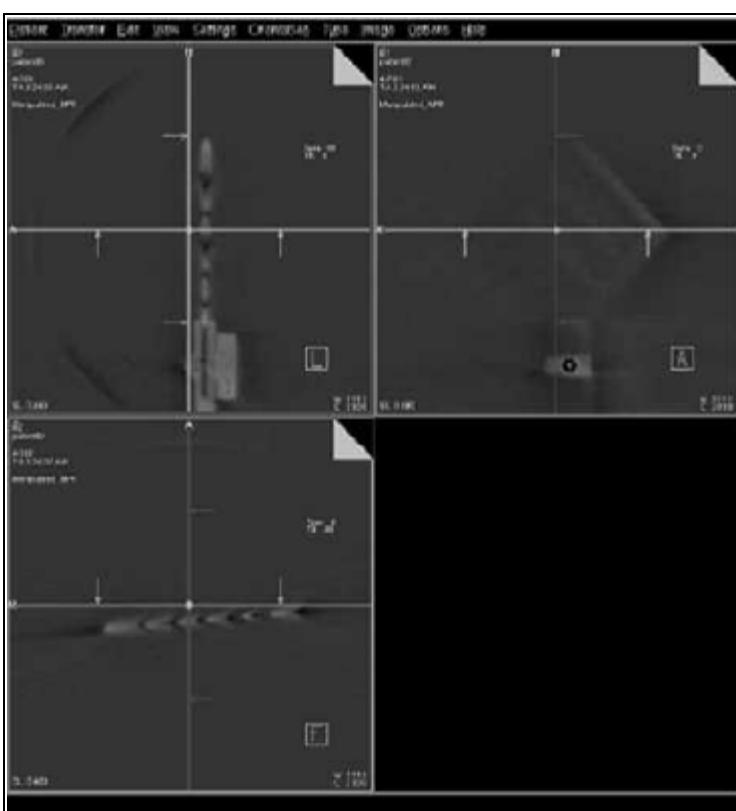


Fig. 93: *syngo image after successful recording and reconstruction*

Checking 3D high resolution

Target:

Determine the optimal slice plane for representing the lead strip test in the syngo window.

In upper left-hand window:

- Use the vertical selection bar to select the the plane that passes directly through the lead strip test.
- Then use the horizontal bar to select a slice plane in the center of the lead line grid.

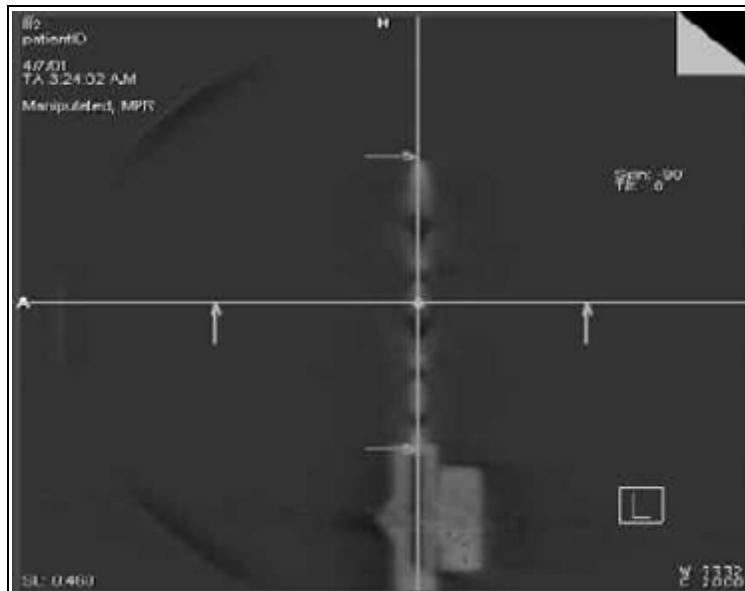


Fig. 94: Setting the slice plane in the top left window

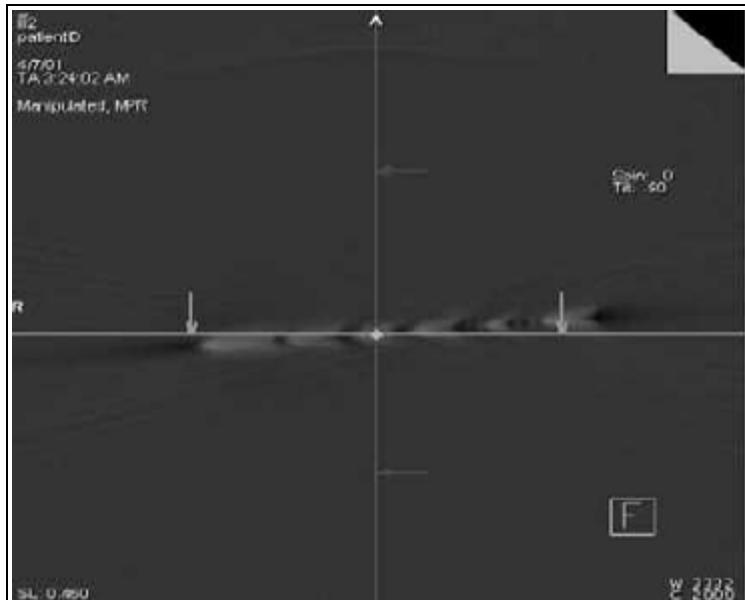


Fig. 95: Slice plane in the bottom left window

- If the lead strip test pattern is slanted in relation to the floor plane, correct this by rotating the slice plane in Free Mode.

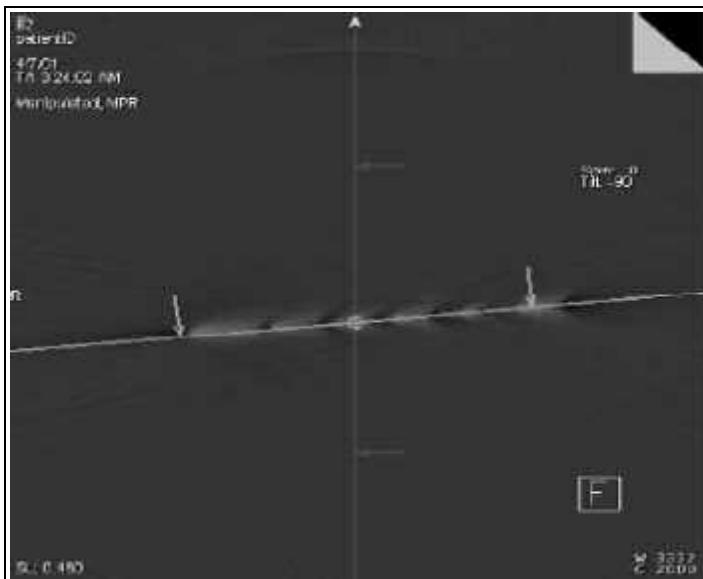


Fig. 96: Rotating the slice plane

⇒ A syngo image should show a slice plane parallel to the lead line grid.

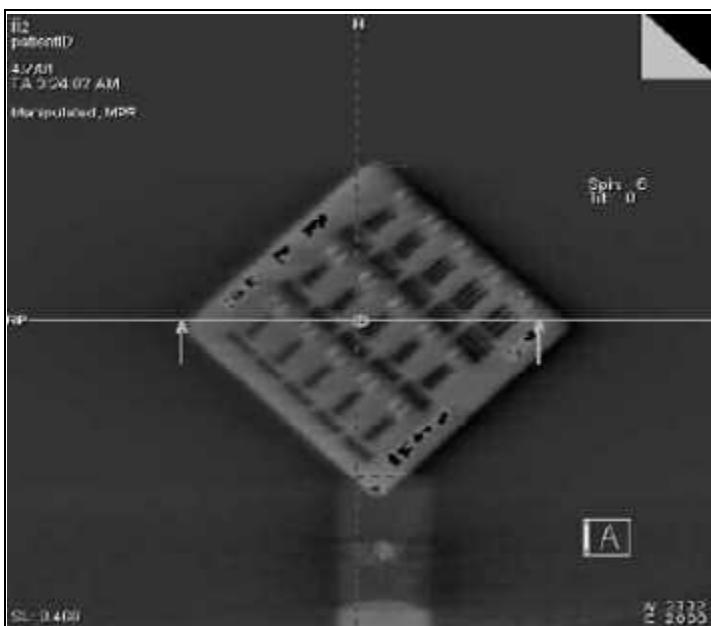


Fig. 97: Plane parallel to the lead strip test

- Double-click this image.
⇒ A full-field image is displayed.

- Check the 3D high resolution (1 LP/mm should be attained).

It may be necessary to use the appropriate mouse button to return to a previous window.

NOTE

If 3D high resolution is not achieved, the calibration must be performed again.

Checking the overall accuracy of the 3D navigation

NOTE

The overall accuracy after calibration must be checked together with the navigation system. Therefore, a technician of the navigation company must also be present.

Final work steps

- Create backup.
- File new CDs in the logbook.



Medical Solutions

BrainLAB AG
85551 Heimstetten / Germany
Fax-Nr. +49 89 991568-811

or

BrainLAB Inc., Chicago Office
60154 Westchester /United States
Fax-Nr. +1 708 409-1619

Name

Department

Telephone

Fax

E-mail

Date

To whom it may concern,
enclosed you will find the confirmation at the "Navi Link 3D Nav Interface" installation and / or
the "Integrated Navigation Kit".

Hospital:

Department:

contact person from the Hospital.....

System Serial number:

The follow activities are done: o.k.

Hardware mounted

Integrated Navigation Kit

License installed

Network Nodes configured

Calibration

Image quality test

Service key in the binder inserted

Sincerely yours,

Fig. 98: FAX

Addition of all work steps necessary for installation and adjustment to workflow differences between BrainLAB and other navigation companies.

Summary of 2D and 3D navigation